Index to Volume 35

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HOW TO USE THIS INDEX

This index is of similar form to the Cumulative Indexes of this journal, covering, respectively, Volumes 1–10, Volumes 11–20, and Volumes 21–30, and is composed of three main divisions: the Author Index to Volume 35, the Inventor Index to Acoustical Patents, Volume 35, and the Analytic Subject Index to Volume 35.

The Subject Index to Volume 35 of *The Journal of the Acoustical Society of America* lists the titles of all the papers, abstracts, and patents under thirteen section headings as follows: **0**, General, Unclassified; **1**, Acoustical Society of America; **2**, Architectural Acoustics; **3**, Books, Bibliographies, and Surveys; **4**, The Ear and Hearing; **5**, Applied Acoustics, Instruments and Apparatus; **6**, Musical Instruments and Music; **7**, Noise; **8**, Standards; **9**, Speech Communication; **10**, Ultrasonics (Supersonics); **11**, Waves and Vibrations; **12**, Mechanical Vibration and Shock; and **13**, Underwater Sound. Each of these sections is further divided into a considerable number of decimally numbered subjects, which are listed below under the heading, "Classification of Subjects." Each subject is divided into eight parts entitled, respectively, Papers, Letters to the Editor, Abstracts, Subtitles, Patents, Book Reviews, News, and Errata. Under *Papers* will be found the original titles of all the papers appearing in the Journal on that subject. Under *Abstracts* are listed the titles of the papers presented at meetings. Since a great amount of valuable material appears in the Journal in papers whose titles cannot fully describe all the subjects that the papers cover, some subtitles of papers have been indexed under the heading *Subtitles*. When subtitles covering the material did not appear in the paper, they were written; the captions of some of the figures were also included under this heading. Thus, while the Subtitles portion of the index is informal, it is hoped that it will increase the probability of finding the desired information quickly. All patents appearing in the journal are listed under the heading *Patents*. New classifications are added from time to time. The year in which classifications are added appears in parentheses after the subject classes.

The reader or his librarian should go over the list of errata classified under 0.1 and either make the indicated corrections in the original papers or enter a note beside the title of the original paper—'See Erratum, Vol. *XX*, p. *xxx*."

References on most subjects can be located immediately by a logical use of the *Classification of Subjects* below. In case the reference sought is of an unusual character such that there is uncertainty as to the subject under which it might have been classified, this can usually be found quite quickly by the process of eliminating the sections and subjects under which it is quite improbable that it might have been listed. In case of doubt, a title has often been listed under a number of subjects.

Obviously, the Author or Inventor Index is more convenient than the Subject Index when one knows the name of the author of the paper or the inventor of the patent in which he is interested.

The *References to Contemporary Papers on Acoustics* are identified in each issue by the same decimal numbers listed below, and may be consulted for references in other journals than our own. In Volume 35, these references will be found on pages 125, 415, 744, 1071, 1467, and 1845.

CLASSIFICATION OF SUBJECTS

0. General, Unclassified

- 0.1 Errata
- 0.2 Conferences, Lectures, and Announcements, not of the Acoustical Society
- 0.3 Nonacoustical Theories
- 0.4 Nonacoustic Devices

1. Acoustical Society of America

- 1.1 General, Unclassified
- 1.2 Constitution and Bylaws
- 1.3 History
- 1.4 Honorary Members
- 1.5 Meetings
- 1.6 Members and Membership Lists
- 1.7 Committee Activities

2. Architectural Acoustics

- 2.1 General, Unclassified
- 2.2 Auditorium Design. (See also 7.6.)
- 2.3 Studies of Existing Auditoria and Acoustic Enclosures
- 2.4 Sound Absorption, Theory and Methods of Measurements of. (See also 2.5.)
- 2.5 Materials for Sound Absorption. Values of Absorption Coefficients and Acoustic Impedances
- 2.6 Noise Reduction by Increased Room Absorption
- 2.7 Reverberation and Echoes. (See also 2.3, 2.4, 2.8, 2.9, and 2.10.)
- 2.8 Reverberation Measuring Instruments. (See also 2.7 and 5.15.)

2.9 Sound Transmission, Theory and Methods of Measurement of. (See also 2.10.)
2.10 Sound Insulating Structures. Values of Transmission Coefficients
2.11 Vibration Insulating Supports. (See also 5.21 and 12.3i.)
2.12 Damping of Panels
2.13 Anechoic Chamber Design. Wedges

3. Books, Bibliographies, and Surveys

3.1 Books and Book Reviews
3.2 Bibliographies
3.3 Patents
3.4 Surveys, Historical and Philosophical Literature

4. The Ear and Hearing

4.1 General, Unclassified
4.2 Anatomy and Physiology of the Ear
4.3 Binaural Hearing. Localization
4.4 Deafness. (See also 5.5.)
4.4.5 Auditory Fatigue, Temporary Threshold Shift
4.5 Instruments Relating to Hearing, and for the Testing of Hearing. (See also 5.5.)
4.6 Loudness, Threshold Determinations
4.7 Masking. (See also 5.5.)
4.8 Phase Effects. (See also 4.3.)
4.9 Pitch
4.10 Subjective Tones
4.11 Theories of Hearing
4.12 Timbre
4.13 Ear Acoustical Impedance
4.14 Ear Protectors, Earplugs
4.14 Perception of Signals. Detection of Signals in Noise

5. Applied Acoustics, Instruments and Apparatus. (See also 2.8, 4.5, 9.6, 10.3, 12.3, 12.3p, 12.3Z, 13.11, 13.11n, and 13.11t.)

5.1 General, Unclassified
5.2 Amplifiers and Attenuators
5.3 Acoustic Impedance Measurement. (See also 11.4 and 12.3Z.)
5.4 Analyzers and Filters, Acoustic and Electric. Oscillographs. (See also 5.15 and 12.3f.)
5.5 Audiometers. (See also 4.4 and 4.5.)
5.5.1 Broadcasting
5.6 Chronographs
5.7 Frequency Standards, Frequency Measuring and Recording Instruments
5.8 Loudspeakers, Horns. (See also 5.13, 5.17, and 5.18.)
5.9 Microphones. Microphone Calibration Equipment and Techniques. (See also 5.18, 12.3p, and 13.11t.)
5.10 Navigational Instruments Using Air Sound. Altitude Measuring Instruments. Sound Ranging (for Underwater Ranging see 13.11n)
5.11 Oscillators, Electrical and Mechanical
5.12 Phase Meters
5.13 Public Address Systems and Sound Picture Installations
5.14 Rayleigh Disks. Radiometers
5.15 Sound-Level Meters. Level Recorders. Sound Pressure Measurement. (See also 5.4.)
5.16 Sound Recording and Reproducing. General
5.16d Disk Recording (including cutting and embossing)
5.16f Film Recording (by photographic means)
5.16m Magnetic Recording
5.17 Telephones, Telephone Earphones, Intercommunication Systems. (See also 5.13.)
5.18 Transducing Principles, Structures, and Materials, General. (See also 5.8, 5.9, 5.17, 10.3, 12.3p, 13.7, and 13.11t.)
5.18m Magnetic Transducers; Magnetostriction
5.18p Piezoelectric Transducers, Ferroelectrics
5.19 Tuning Forks
5.20 Tone and Wave Synthesizers
5.21 Vibration Devices. Devices for Generating or Damping Vibrations. (See also 12., 12.3, 12.3i, 12.3p, and 12.3v.)

6. Musical Instruments and Music

6.1 General, Unclassified
6.2 Bells, Xylophones. Other Instruments Having Rigid Vibrators
6.3 Brass Wind Instruments (lip vibrated)
6.4 Drums and Other Membranophonic Instruments
6.5 Pipe Organs
6.6 Pianos and Other Keyboard Stringed Instruments
6.7 Violin Family. Stringed Instruments Except Keyboard Type
6.8 Wood Winds
6.9 Electrical Musical Instruments
6.10 Reed Organs. Accordions, Harmonicas
6.11 Singing—Vibrato. (Changed from 9.9 beginning 1961.)

7. Noise

7.1 General, Unclassified
7.2 Annoyance
7.3 Audiograms of Noise
7.4 City Noise
7.5 Frequency Analyses of Noise
7.6 Noise in Buildings. (See also 2.2.)
7.7 Machinery Noise. Mufflers. Noise Silencers
7.8 Noise Generators, Sirens
7.9 Noise of Animals, Biological Noise. (See also 13.9.)
7.10 Aerodynamic Noise, Jet Noise

8. Standards

8.1 General, Unclassified

9. Speech Communication. (Revised 1961.)

9.1 General, Unclassified
9.2 Properties of the Vocal Mechanism
9.3 Acoustic Analysis of Speech
9.4 Speech Synthesis
9.5 Perception of Speech and Speechlike Sounds
9.6 Measures of Speech Intelligibility. Quality Information Content
9.7 Phonetics, Linguistics, Statistics of Language
9.8 Systems for Speech Transmission, Analysis-Synthesis Telephony, Speech Coding
9.9 Instruments for Speech Measurement. (Former 9.9 classification "Singing" changed to 6.11 beginning 1961.)
9.10 Machine Recognition of Speech

10. Ultrasonics (Supersonics)

10.1 General, Unclassified
10.2 Light Affected by Ultrasonic Waves
10.3 Ultrasonic Instruments. (See also 5.18.)
10.4 Gases, Ultrasonic Velocities, Dispersion, and Absorption. (See also 11.3.)
10.5 Liquids, Ultrasonic Velocities, Dispersion, and Absorption. (See also 13.2 and 13.3)

10.6 Solids, Ultrasonic Velocities, Dispersion, and Absorption
10.7 Physical Effects of Ultrasonic Waves. (See also 10.2.)
10.8 Chemical Effects of Ultrasonic Waves
10.9 Biological Effects of Ultrasonic Waves

11. Waves and Vibrations. (See also 13.)

11.1 General, Unclassified
11.1.5 Analogies
11.2 Diffraction. Interference. Scattering. Reflection. Echoes, Standing Waves
11.2.1 Gross Movement of Matter by Sound or Vibration. Acoustic Streaming. Chladni Figures. Kundt's Striae. Sensitive Flames. (See also 5.14 and 10.7.)
11.3 Propagation of Sound. Absorption during Propagation. Velocity of Sound. Second Sound. Refraction. Wavelength. Doppler Effect. (See also 10.4, 10.5, 10.6, 13.2, and 13.3.)
11.4 Radiation from Vibrating Objects. Acoustic Impedance. (See also 5.3, 12.3Z, and 13.7.)
11.5 Sounds of Finite Amplitude. Distortion. (See also 1.3 and 13.10.)
11.6 Noise in Tubes, Helmholtz Resonators
11.6.1 Sources of Sound. (See also 7.8 and 11.4.)
11.7 Theory of Waves. (See also 5.4, 11.1.5, and 12.7.)
11.8 Biological Effects of Sound. (See also 10.9 and 12.9.)
11.9 Physical Effects of Sound. (See also 10.7, 10.8, 11.2.1, and 12.10.)

12. Mechanical Vibration and Shock. (See also 5. and 11.)

12.1 General, Unclassified
12.3 Instruments and Apparatus Relating to Vibration and Shock. (See also 5.3, 5.4, 5.9, and 5.21.)
12.3f Mechanical Filters. (See also 5.4.)
12.3i Vibration Isolators, Attenuators and Dampers. (See also 2.11 and 5.21.)
12.3p Vibration Pickups and Indicators, Calibration Equipment and Techniques. (See also 5.9, 5.18, and 13.11t.)
12.3v Vibration Generators. Shake Tables. (See also 5.21.)
12.3Z Mechanical Impedance Measurement. (See also 5.3 and 11.4.)
12.5 Shock. (See also 11.5 and 13.10.)
12.7 Vibration. Theory of Vibrating Systems. (See also 11.7 and 11.1.5.)
12.9 Biological Effects of Vibration and Shock. (See also 10.9 and 11.8.)
12.10 Seismology Seismographs. Geophysical Prospecting. (Started 1960.)

13. Underwater Sound

13.1 General, Unclassified
13.2 Propagation of Sound in Water. Attenuation. Fluctuation
13.3 Velocity of Sound in Water. Refraction. Doppler Effect
13.4 Reflection. Echoes. Structures for Absorbing Sound in Water
13.5 Interference. Diffraction
13.6 Scattering. Reverberation in Water
13.7 Radiation from Objects Vibrating under Water. Acoustical Impedance. Mechanical Impedance. (See also 5.3, 1.4, and 12.3Z.)
13.8 Sound Generation by Fluid Motion, Bubbles, Turbulence, Cavitation, or Splashes
13.9 Noise in Water. Ship Noise. Biological Noises
13.10 Sound of Finite Amplitude in Water Explosions. Distortion. Cavitation. (See also 11.5 and 12.5)
13.11 Instruments Relating to Underwater Sound. General
13.11n Navigational Instruments Using Underwater Sound. Underwater Listening and Echo Ranging Devices, Sonar
13.11t Transducers for Underwater Sound. Transducer Calibration. (See also 5.18.)

Author Index to Volume 35

Numerals in boldface type refer to volume numbers. (A) designates Abstract; (L) designates Letter to the Editor; (T) designates Title only, (AN) designates Acoustical News. A separate Inventor Index to Acoustical Patents appears at the end of the regular Author Index.

Abramson, Arthur S. and Franklin S. Cooper. Slow-motion x-ray pictures with stretched speech as a research tool. **35**: 1888(A)—1963

—— (see Lisker, Leigh). **35**: 1889(A)—1963

Ackerman, Eugene. Rupture of canine erythrocytes in ultrasonic fields in which cavitation has been suppressed. **35**: 809(A)—1963

Adams, Carl E. Review of *Acoustical Techniques and Transducers* by M. L. Gayford. **35**: 125—1963

—— Review of *The Wave-Guide Mode Theory of Wave Propagation* by K. G. Budden. **35**: 945—1963

Adlington, R. H. Acoustic-reflection losses at the sea surface, measured with explosive sources. **35**: 1834(L)—1963

Aitken, A. R., R. L. Brueck, and D. R. Ziemer. Recent advances in speech-compression techniques. **35**: 789(A)—1963

Albers, V. M. Review of *Marine Sciences Instrumentation, Vol. I* edited by R. D. Gaul, D. D. Ketchum, J. T. Shaw, and J. M. Snodgrass. **35**: 1070—1963

—— Review of *Marine Sciences Instrumentation, Vol. II* edited by R. D. Gaul. **35**: 1070—1963

——, Editor. *Underwater Acoustics* reviewed by William S. Cramer. **35**: 744—1963

Alford, Bobby R. (see Mikaelian, D.). **35**: 782(A)—1963

—— (see Ruben, R. J.). **35**: 782(A)—1963

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—— (see Kurtzberg, Richard L.). **35**: 1877(A)—1963

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Alterman, Z. and P. Kornfeld. Propagation of a pulse within a sphere. **35**: 1649—1963

Ambrose, Edmund G., Jr., Stanley L. Ehrlich, and Janet S. Tudino. Receiving response of an arc segment of a cylindrical hydrophone in a plane-wave sound field. **35**: 792(A)—1963

Anderson, Charles V. and Robert C. Bilger. Frequency resolution at 1000 and 4000 cps. **35**: 1896(A)—1963

Anderson, Victor C. and John C. Munson. Directivity of spherical receiving arrays. **35**: 1162—1963
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—— (see Uldall, Elizabeth). **35**: 1115(A)—1963
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—— (see Arase, T.). **35**: 735(L)—1963
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—— (see Arase, E. M.) **35**: 1884(A)—1963
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—— **and Samuel Sutton.** Perception of temporal order and loudness judgments for dichotic clicks. **35**: 574—1963
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—— Vibration of the clarinet body and its contribution to the clarinet tone. **35**: 1901(A)—1963
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—— **and K. McCormack.** Computation of farfield characteristics of a transducer from nearfield measurements made in a reflective tank. **35**: 736(L)—1963
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—— Visarga vowels. **35**: 1889(A)—1963
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—— **and John P. Jones.** On axial vibrations of a whirling bar. **35**: 217—1963
—— **and John P. Jones.** Symmetric planar vibrations of a rotating disk. **35**: 982—1963
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—— (see Kozin, F.). **35**: 2024(L)—1963
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—— **and Warren Creel.** Patterns of ratio relationships in melody. **35**: 772(A)—1963
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Brand, Ronald P. and Wesley L. Nyborg. Parametrically excited surface waves and associated time-independent circulation. **35**: 775(A)—1963
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—— Frequency discrimination of pulsed tones. **35**: 1193—1963
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—— **and A. M. Small, Jr.** Effect of practice and feedback on frequency discrimination. **35**: 1511—1963
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——, **F. T. McClure, and R. W. Hart.** Acoustic damping in cavities with mean velocity and thermal boundary layers. **35**: 500—1963
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Diebold, Albert Anthony. 3,018,681. Piano case. **35**: 1100—1963
Diehl, William Carl. 3,066,755. Muffler with spiral partition. **35**: 2044—1963
Dieter, Norman H., Jr., and Egon H. Bauer. 3,087,027. Dual stylus phonograph pickup and holder. **35**: 1495—1963
Digby, James D. (see Kruse, Ralph H.). **35**: 764—1963
Di Giovanni, Mario. 2,995,721. Transducer. **35**: 768—1963

DiMattia, Alfred L. and Edward Kaulins. 3,088,743. Universal mount for stylus assembly. **35**: 2032—1963
—— (see Roberts, Frederick W.). **35**: 163—1963
—— (see Sioles, Georges W.). **35**: 1308—1963
Dimitracopoulos, Panayotis C. and Constantine D. Pezaris. 3,081,383. Method and means for variable resistance recording. **35**: 1308—1963
Dinse, Werner (see Fischer, Georg). **35**: 1310—1963
Doncaster, Daniel P. 3,044,783. Phonograph pickup. **35**: 162—1963
Dorf, Richard H. 3,040,612. Electrical musical instrument. **35**: 262—1963
Dorsett, James W., Jr. (see Tronslin, Cyril B.). **35**: 1867—1963
Dow, Harrison E. 3,060,266. Stereophonic sound reproducing system. **35**: 629—1963
Dow, Willard. 3,038,143. Telemetering depth meter. **35**: 167—1963
Draheim, Willi. 2,973,156. Tape recorder. **35**: 1308—1963
Drake, Frederick H. 3,047,297. Phonograph turntable assembly. **35**: 163—1963
Dransfeld, Klaus (see Bommel, Hans E.). **35**: 166—1963
Dreier, Raymond C. 3,051,493. Phonograph pickup device. **35**: 630—1963
Drost, Peter (see Neumann, Helmut). **35**: 2033—1963
Drukey, Donald L. (see Beckner, Bernard E.). **35**: 633—1963
Dubsky, Borivoj, Lldrich Straka, and Josef Bican. 3,017,575. Electromagnetic recording apparatus. **35**: 1319—1963
Dudley, John W. 3,084,331. Underwater search apparatus. **35**: 1500—1963
Duinker, Simon and Jules Bos. 3,024,318. Glass gap spacer for magnetic heads. **35**: 1867—1963
—— **and Jacob Koorneef.** 3,042,758. Combination of radio receivers and magnetic record reproducing devices. **35**: 440—1963
Duncan, Robert K. 3,060,282. Electroacoustic transducer. **35**: 1307—1963
Duthion, Louis and Jean H. Bertin. 3,039,560. Discharge nozzle for jet silencing. **35**: 2042—1963

Eckel, Oliver C. 3,051,260. Door for attenuating sound. **35**: 1675—1963
Eckert, Lewis W. 3,017,947. Acoustical material and method of making the same. **35**: 947—1963
Edwards, Thomas C. 3,085,460. Portable electronic musical instruments. **35**: 1871—1963
Efromson, Philip C. and Robert C. Lewis. 3,004,178. Vibration generator. **35**: 952—1963
Ehret, Robert J. 2,980,768. Magnetic recording system. **35**: 764—1963
Eldridge, Donald F. and Eric D. Daniel. 3,070,670. Magnetic record head assembly. **35**: 633—1963
Elliott, Lloyd E. (see Savage, Kerry D.). **35**: 2051—1963
Elliott, Sam D. 3,041,578. Seismic exploration. **35**: 2047—1963
—— (see Mendenhall, Harold L.). **35**: 1108—1963
Ellmore, William A. 3,006,650. Magnetic tape machine. **35**: 633—1963
Ellsworth, William M. 3,039,559. Sound producing device. **35**: 264—1963
Enrico, Giovanni. 3,024,760. Sound device signalling the beginning of the exhaustion of a liquid gas bottle. **35**: 436—1963
Epstein, Saul. 3,013,124. Method of recording low-frequency a. c. signals on a magnetic tape. **35**: 1314—1963
Erichsen, Herman W. (see Schilling, Arthur R.). **35**: 1307—1963
Evans, Chauncey Richard. 3,073,203. Conversion of mechanical vibrations into electrical oscillations. **35**: 1099—1963
—— 3,080,785. Electroacoustic tone-modifying system for stringed musical instruments. **35**: 1320—1963
Evans, Julian F. 3,061,037. Subsurface seismic surveying. **35**: 2049—1963
Eyestone, Shirley F. and Wesley E. Dickinson. 2,995,935. Accelerometer. **35**: 635—1963

Faherty, John L., Jr. 3,050,582. Anti-feedback system. **35**: 162—1963
Farnsworth, Philo T., III. 3,073,899. Transducing apparatus. **35**: 1306—1963
Farr, Warren Herman. 3,048,073. Musical string tuning device. **35**: 443—1963
Farwell, Claude C. 3,076,520. Loudspeaker. **35**: 1306—1963
Faulkner, Willard J. and Robert J. Hammond. 3,046,024. Pickup system for phonographs. **35**: 163—1963
Fawcett, Howard N. (see Kruse, Ralph H.). **35**: 764—1963
Fay, James P. 2,968,702. Transport means for a magnetic recorder-reproducer. **35**: 1309—1963
—— 3,078,352. Signal translating apparatus and method. **35**: 1318—1963
Fehlner, Leo F. (see Lasky, Marvin L.). **35**: 264—1963
Fener, Howard. 3,076,062. Hearing-aid sound transducer. **35**: 1097—1963
Finlay, Alexander (see Burgener, Robert C.). **35**: 262—1963
Fischel, Eduard M. 3,046,794. Accelerometer. **35**: 264—1963
Fischer, Georg, Hans-Georg Lange, and Werner Dinse. 2,975,242. Drive mechanism for magnetic recording deck. **35**: 1310—1963
—— (see Wehde, Henrich). **35**: 441—1963
Flan, Anthony. 3,027,112. Automatic magazine type tape mechanism. **35**: 1868—1963
Flateau, Christian L. (see Osborne, Fred H.). **35**: 2035—1963
Fleming, Lawrence T. and Robert K. Willardson. 3,077,520. Magnetic pickup heads. **35**: 1317—1963
Fletcher, John L. and Arthur J. Riopelle. 3,068,319. Acoustic reflex ear protective system. **35**: 760—1963
Fogarty, Laurence E. 2,938,682. Method and means for focusing sound caused by aircraft. **35**: 443—1963
Franck, Glenn H. 3,057,083. Engine noise simulator. **35**: 766—1963
François, Robert E. 3,048,814. Underwater target simulator. **35**: 637—1963
Franx, Cornelis. 2,925,502. Piezo-electric quartz crystal of elongated shape. **35**: 1098—1963
Frederick, Harold M. and Isaac M. Sheaffer, Jr. 3,091,669. Mounting device for a magnetic transducer head. **35**: 1871—1963
French, Edward P. and Stanley J. Minton. 3,046,733. Acoustic buzz suppressor. **35**: 2043—1963
Frerichs, Hans-Günther (see Reher, Helmut). **35**: 1316—1963
Frielinghaus, Klaus H. (see Kendall, Hugh C.). **35**: 2047—1963
Fries, Gustav. 3,025,012. Device for re-winding an endless tape. **35**: 1867—1963
Fruengel, Frank. 2,946,217. System for probing materials by shock wave signals. **35**: 1109—1963
Fry, William J. 2,986,227. Acoustic wave measuring method and apparatus. **35**: 445—1963
Fryklund, Robert A. (see Beebe, John N.). **35**: 167—1963
Fujimoto, Sakae. 3,046,357. Magnetic recording and reproducing machine. **35**: 164—1963
—— 3,060,940. Device for preparing magnetic record matrix plates in magnetic recording machines of spiral track type. **35**: 633—1963

Gabor, Dennis. 3,064,087. Magnetic recording devices. **35**: 764—1963
Galin, Leo L. 2,967,219. Vibrating reed control device. **35**: 436—1963
Gardiner, Paul C. 3,089,451. Transducer pitch control for echo controlled torpedo. **35**: 2052—1963
Gardner, Priscilla D. Reissue 25,259. Personalized sound. **35**: 630—1963.
Garner, James I. (see Rork, Wallace G.). **35**: 636—1963
Gaubert, Rene J. 3,083,269. Programmed tape apparatus. **35**: 2036—1963
Gelfand, Louis and George B. Long. 2,985,003. Sonic washer. **35**: 1105—1963
Gelletich, Dusan S. (see Baker, John F.). **35**: 442—1963
Geloso, Giovanni. 2,974,892. Reel for magnetophone bands. **35**: 1309—1963
Genning, Ernst. 2,994,535. Arrangement of spools in a wire stock replacement unit for magnetic sound recording and reproducing apparatus. **35**: 1312—1963
—— 3,029,034. Brake for reversible drive means in wire or tape sound recording and reproducing apparatus. **35**: 1869—1963
—— (see Schuh, Carl F.). **35**: 1315—1963
Geren, Keith E. 3,064,235. Audible broadband sonar monitors. **35**: 952—1963
Gerlach, Stephen G. 2,986,000. Exhaust muffler and oxidizer. **35**: 2038—1963
Gerli, John E. 3,047,091. Muffller. **35**: 2043—1963
Germano, Carmen P. and Melvin G. Kullin. 3,073,914. Ceramic electromechanical transducer. **35**: 763—1963
Gerrard, John A. F. 3,054,473. System for recording data for use in seismic survey. **35**: 1109—1963
Gibbs, Thomas B. 2,994,241. Tuning fork. **35**: 166—1963
Gildone, Anthony M. 3,023,139. Muffler for air cylinders and the like. **35**: 2040—1963
Globe, Samuel. 3,002,062. Method of increasing sensitivity of vibration sensitive element. **35**: 951—1963
Gold, Thomas (see Menzel, Donald H.). **35**: 1107—1963
Goldberger, Erno Meir (see Menuhin, Yehudi). **35**: 2037—1963
Goldman, Richard G. 3,006,184. Ultrasound thickness gauge. **35**: 444—1963
Goldmark, Peter C. 3,032,612. Magnetic recording means. **35**: 1870—1963
—— **and John W. Christensen.** 3,005,056. Recording reproducing system. **35**: 632—1963
Goldsmith, Lloyd T. 3,004,112. Magnetic film marking. **35**: 1308—1963
Goldstein, Alfred Leonard (see Tannenbaum, Wesley). **35**: 1868—1963
Görike, Rudolf. 3,030,457. Electrostatic microphone. **35**: 1307—1963
—— 3,031,538. Small-size condenser microphone. **35**: 1307—1963
—— **and Karl Reinthaler.** 3,035,132. Switching device combined with sound transducer. **35**: 1307—1963.
Gormel, Clarence J. 3,019,300. Carrying case for portable dictating machines. **35**: 1495—1963
Goshen, Charles E. and Joseph Lyman. 2,974,532. Accelerometer. **35**: 767—1963
Granqvist, Carl-Erik. 3,078,351. Sound or pulse recording reproducing apparatus. **35**: 1318—1963
Grant, Frederic F. 3,016,427. Saturable magnetic head. **35**: 1315—1963
Gratian, Joseph W. 3,041,414. Semiconductor magnetic pickup. **35**: 2034—1963
—— 3,041,415. Elimination of amplitude distortion noise. **35**: 2034—1963
—— 3,051,796. Transverse boundary-displacement recording head. **35**: 2035—1963
—— **and Richard J. O'Brien.** 3,020,360. Pronunciary. **35**: 1497—1963
Gravley, Charles K. (see Williams, Alfred L. W.). **35**: 638—1963
Gray, Robert B. 3,053,934. Amplifier system for stereo sound. **35**: 161—1963
Greenberg, Walter H. (see McCoy, John Harvey). **35**: 166—1963
Greening, John Hurley. 2,939,251. High frequency honing. **35**: 1107—1963
Greenleaf, Leland B. 3,044,339. Piston guide key arrangement for brass instrument. **35**: 1676—1963
Greif, Jean A. 3,001,432. Attachment for automatically playing root tones of chords in bass section of organ. **35**: 261—1963
Grever, Jerome L. (see Bick, John D.). **35**: 2034—1963
Griffin, Herbert W. (see Carlin, Kenneth G.). **35**: 948—1963
Grotz, Charles A., William A. Reinhart, and Kenneth V. Swanke. 3,055,174. Retractable noise suppressor for jet engines. **35**: 2043—1963
Grover, George A. 3,056,861. Phonograph pickup. **35**: 631—1963
Guggi, Walter B. (see Kabell, Louis J.). **35**: 1315—1963
Gunst, Dennis. 3,049,965. Method of modifying a recorded sound track and apparatus for producing a modified sound track. **35**: 437—1963
Gunter, Lee, Jr., and Carl Roger Anderson. 3,077,522. Stereophonic pickup cartridge. **35**: 949—1963
Guss, Reuben. 3,055,991. Loudspeaker. **35**: 162—1963

Haan, Gilbert J. and John M. Del Vento. 3,026,093. Sink structure for ultrasonic cleaning. **35**: 1106—1963
Haas, Helmut (see Pieplow, Hans-Werner). **35**: 1870—1963
Hagger, Albert. 2,921,551. Acoustic alarm device. **35**: 435—1963
Hagopian, Jacob J. 3,037,205. Magnetic record disc with gas-supported transducer. **35**: 2033—1963
Hall, William M. 3,039,305. Sonic region detector. **35**: 2047—1963
Hallene, Alan M. and Richard F. Martin. 3,033,306. Noise suppressor for hydraulic systems. **35**: 2051—1963
Hammond, Robert J. 3,054,862. Pickup cartridge. **35**: 163—1963
—— (see Faulkner, Willard J.). **35**: 163—1963
Hanert, John M. 3,048,072. Apparatus for producing pseudo-stereophonic effects. **35**: 1678—1963
—— 3,051,032. Single manual double countermelody electrical musical instrument. **35**: 1679—1963
Hanggi, George J. (see Clynch, Frank). **35**: 2049—1963
Hannon, Stephen J. 3,043,098. Exhaust heater-muffler combination. **35**: 2042—1963
Hansen, Hans Christian. 3,090,624. Magazine phonographs. **35**: 1676—1963
Harbo, Alf F. 3,039,477. Apparatus for cleaning musical instruments of the cup mouthpiece type. **35**: 260—1963
Harnisch, Helmut (see Pieplow, Hans-Werner). **35**: 1870—1963
Harris, Wilbur T. 3,067,345. Rod-mounted plural crystal assembly. **35**: 949—1963
Harrison, Henry Milburn. 3,060,279. Magnetic transducing heads. **35**: 442—1963
Hartz, Harry J. (see Beard, Richard B.). **35**: 444—1963
Haslam, Maurice B. and Oliver C. Miles. 3,048,830. Tape recording system and method. **35**: 440—1963
Hearne, William Thomas, Jr. 2,933,968. Modified thumb rest for clarinets or the like. **35**: 1100—1963
Hedblom, Lar O. 3,038,522. Muffler construction. **35**: 2042—1963

Hedrich, Aibert L. and Don R. Pardue. 2,921,467. Flowmeter compensation for propagation velocity changes. **35**: 443—1963
Heinlein, Carl Trevor. 3,067,296. Piezoelectric stereo cartridge. **35**: 762—1963
Heisig, Henry P. 3,088,002. Ear pad and ear phone support for helmets. **35**: 2031—1963
Heller, Joseph I. 3,050,595. Pocket tape recorders. **35**: 2035—1963
—— 3,057,966. Dielectric recording and playback apparatus and method. **35**: 437—1963
Heller, Robert B. 2,949,769. Self-balancing ultrasonic instrument. **35**: 2046—1963
—— 2,966,057. Apparatus for measuring attenuation of ultrasonic energy. **35**: 445—1963
Hellman, Werner. 2,937,557. Wind actuated toy musical instrument. **35**: 1099—1963
Helstrom, Carl W. (see Altar, William). **35**: 638—1963
Henderson, John D. 3,080,011. Ear canal insert. **35**: 1097—1963
Henry, Elliott A. 3,038,328. Ultrasonic wave train generator. **35**: 2046—1963
Heppenstall, Charles William. 3,067,968. Retractable jet engine noise suppressor. **35**: 1871—1963
Hermann, Gunter (see Schuh, Carl F.). **35**: 1315—1963
Herrmann, Adolf L. 3,032,286. Winding and reeling mechanism. **35**: 1869—1963
Hersey, John B. and Sydney T. Knott. 3,065,815. Method and apparatus for surveying water-covered areas. **35**: 2050—1963
Herzog, Gerhard. 3,062,315. Radio-link system of seismic exploration. **35**: 2050—1963
Hetzel, Max. 2,971,323. Electronically-controlled timepiece. **35**: 1676—1963
—— 3,070,951. Frequency-adjustable tuning fork type vibrator for an electrically energized timepiece. **35**: 950—1963
Hibbard, Haines C. 3,014,610. Seismic transcribing system. **35**: 2048—1963
Hicks, John, IV. 2,992,447. Magnetic head cleaning tape. **35**: 1311—1963
Hidy, John H. 3,042,898. Recording and reproducing apparatus for seismic reflection mapping. **35**: 2048—1963
Hiersch, Frederick A. 3,058,528. Noise suppressed fan structure. **35**: 1873—1963
Hilborn, Edwin H. 2,997,908. Tuning means for an electrical musical instrument. **35**: 1101—1963
Hilding, John R. 3,045,190. Sound simulator utilizing noise source. **35**: 264—1963
Hill, Frank Robert. 3,007,339. Acoustic flowmeters. **35**: 445—1963
Hillmeyer, Albert C. and J. M. Calhoun. 3,059,066. Eyeglass and self-contained hearing aid unit. **35**: 435—1963
Hills, Fielding B. (see Koehn, John J.). **35**: 1310—1963
Hoehn, John J. and Fielding B. Hills. 2,985,395. Magnetic recording and reproducing apparatus. **35**: 1310—1963
Hoffmann, Thomas R. (see Kececioglu, Dimitri B.). **35**: 1104—1963
Hofmann, Frederic A. (see Cooper, Herbert K.). **35**: 1499—1963
Hohmann, Charles R. (see Williams, Philip B.). **35**: 1306—1963
Hollingsworth, R. Lee. 3,004,111. Complementary magnetic cores for selective magnetic record readout. **35**: 1314—1963
Holmes, Paul J. 3,002,391. Plural axis transducer. **35**: 768—1963
Horres, Eugene S. 2,982,489. Continuous tape recorder and sound reproducer. **35**: 764—1963
Horstkorta, Donald A. 3,076,060. Magnetic tape apparatus. **35**: 1317—1963
Hoshino, Yasushi. 3,031,533. Apparatus for recording and reproducing sound continuously for a long time adapted to be attached on a magnetic sound record reading machine. **35**: 164—1963
——, **Mamoru Namikawa, and Shigezo Tochihara.** 2,999,907. System for manufacturing at high speed magnetic sound record sheets used on a magnetic sound record reading machine. **35**: 1313—1963
——, **Mamoru Namikawa, and Shigezo Tochihara.** 2,999,908. Device for holding a master magnetic record sheet and a magnetic record sheet to be printed in a correct overlapping relationship in printing operation. **35**: 1313—1963
—— **and Minoru Sato.** 3,036,381. Mechanism for enabling a magnetic recorder to be used with a magnetic record sheet shorter than standard size. **35**: 1316—1963
——, **Minoru Sato, Mamoru Namikawa, and Shigezo Tochihara.** 3,022,078. Magnetic record sheet for a magnetic recording and reading apparatus. **35**: 1316—1963
House, John I. and Leland G. Ward. 3,076,521. Muffler. **35**: 2045—1963
Houser, Vernon B. 2,988,947. Attachment for mouthpiece of reed instrument. **35**: 1101—1963
Howe, Eugene E. 3,093,208. Composite coated muffler and method of making the same. **35**: 1873—1963
Howling, Dennis H. 2,978,545. Magnetic playback heads. **35**: 439—1963
Hubbard, William M. (see Adams, Edmond). **35**: 1311—1963
Huckabay, William B. 3,075,606. Multiple reflection determination for continuous marine acoustic exploration. **35**: 1110—1963
—— **and William H. Parker.** 3,090,938. Underwater beacon. **35**: 2052—1963
Hudes, Ellis (see Tannenbaum, Wesley). **35**: 1868—1963
Hudimac, Albert A. 3,088,062. Electromechanical vibratory force suppressor and indicator. **35**: 2047—1963
Humble, John A. 3,018,664. Accelerometers. **35**: 635—1963
Hunt, Frederick V. (see Bouyoucos, John V.). **35**: 1098—1963
Hunter, Jonathan. 2,989,595. Superimposed recording. **35**: 1311—1963
Huth, Walter H. 3,098,127. Hearing aid. **35**: 1866—1963
Hyatt, Arthur J. 2,974,960. Apparatus for positioning and scanning a transducer head over a grooveless record. **35**: 1309—1963
Hyman, Abraham. 3,054,855. Audiometer. **35**: 161—1963

Igarashi, Tadashi. 3,045,776. Speaker mounting device. **35**: 161—1963
Imhoff, Albert W. 3,018,682. Tremolo for organ. **35**: 1100—1963
Iorio, Amedeo. 3,084,584. Electrical musical instrument. **35**: 1499—1963
Ippolito, Anthony C. (see Osborne, Fred H.). **35**: 2035—1963
Irving, Jack H. (see Beckner, Bernard E.). **35**: 633—1963
Itria, Oswald A. 3,048,235. Geophysical exploration. **35**: 2048—1963
—— **and Alvin L. Parrack.** 3,050,149. Method for seismic prospecting. **35**: 1108—1963

Jack, William A. 3,027,965. Acoustical panel. **35**: 1096—1963
—— 3,037,578. Paper enclosed low density pad with septum. **35**: 1097—1963
Jacke, Stanley Emil and John W. Collison. 2,950,725. Ultrasonic cleaning apparatus. **35**: 1104—1963
Jackson, Chauncey D., William L. Batchelor, and Donald B. Thompson. 2,975,239. Electromagnetic eraser. **35**: 1309—1963

Jacokes, Benton D. (see Powers, Walter H.). **35**: 2044—1963
Jaenicke, Heinz (see Weidner, Karl Benno). **35**: 444—1963
Jenkins, John P. (see Bailey, Fred L.). **35**: 442—1963
Jewett, Harold A. 2,996,942. Keyboards and accessories. **35**: 1100—1963
Jobson, Edward M. 3,080,940. Cast muffler. **35**: 2045—1963
Johnson, Donald E. 3,088,741. Apparatus for balancing the outputs of a stereophonic phonograph pickup cartridge. **35**: 2031—1963
Johnson, George N. and Charles L. Vice. 3,016,429. Magnetostructure recording device. **35**: 1315—1963
Johnson, Lenard H. (see Boice, Frank S.). **35**: 2048—1963
Johnson, Norman G. (see Coursen, David L.). **35**: 2050—1963
Johnson, Robert B. 3,062,924. Film transport system for sound recording and reproducing devices. **35**: 438—1963
Johnson, Thomas M. 2,957,957. Sound switch. **35**: 436—1963
Johnson, Wayne R. 3,016,416. Magnetic transducing system. **35**: 1315—1963
—— 3,049,589. Transducing system using controlled delay lines. **35**: 440—1963
—— 3,086,087. Transducer for magnetically recorded signals. **35**: 1319—1963
Johnson, Wesley R. and Dale O. Larson. 3,023,279. Transducer mounting. **35**: 1316—1963
Jones, Albert C., Frederick J. Lingel, and Peter B. Troup. 3,085,168. Tuning fork. **35**: 1498—1963
Jones, James Byron. 3,029,766. Ultrasonic tool. **35**: 2046—1963
—— 3,038,358. Ultrasonic devices. **35**: 2046—1963
—— **and Elmer E. Weismantel.** 3,038,359. Vibratory device. **35**: 2046—1963
Jones, John Paul, Jr. 3,076,870. Sound transducer system. **35**: 1097—1963
Jones, Lloyd R. (see Roberts, Frederick W.). **35**: 163—1963
Jones, Loren F. 2,975,238. Portable disk-type magnetic recording apparatus. **35**: 1309—1963
Jorgensen, Finn (see Veneklasen, Paul S.). **35**: 436—1963
Joy, Ellis F. 3,062,911. Temple piece for spectacles hearing aid. **35**: 760—1963
Joy, Ivan L. 2,949,028. Apparatus for ultrasonic materials testing. **35**: 2045—1963

Kabell, Louis J., Howard E. Murphy, and Walter B. Guggi. 3,016,428. Rotary head drive control mechanism and circuitry for recording magnetic tape recording and/or reproducing apparatus. **35**: 1315—1963
Karon, Gerald (see Reifel, Harry). **35**: 1498—1963
Katzenstein, Henry S. and Jack Katzenstein. 2,991,650. Sonic flowmeter. **35**: 444—1963
Katzenstein, Jack (see Katzenstein, Henry S.). **35**: 444—1963
Kaulins, Edward (see DiMattia, Alfred L.). **35**: 2032—1963
Kawakami, Hirotake (see Kishi, Kanesuke). **35**: 1307—1963
Kececioglu, Dimitri B., Robert T. Baugh, and Thomas R. Hoffmann. 2,980,345. Ultrasonic apparatus and methods of comminution. **35**: 1104—1963
Kelley, Joseph J., Jr. 3,066,567. Magnetic pick-up for steel string instruments. **35**: 766—1963
Kelly, Stanley, Alec Schumann, and John Nelson Adams. 3,089,922. Novel mounting sheath for piezoelectric phonograph cartridge. **35**: 1676—1963
Kelly, Thomas N. 3,080,939. Marine type muffler. **35**: 2045—1963
Kemp, William G. 3,021,915. Acoustical unit with attenuation means. **35**: 947—1963
—— 3,021,916. Reinforced acoustical unit. **35**: 948—1963
Kendall, Hugh C., John H. Auer, Jr., Norman A. Bolton, and Klaus H. Frielinghaus. 3,042,899. Ultrasonic vehicle detection system. **35**: 2047—1963
Kendall, Paul D. (see Tresise, Raleigh E.). **35**: 1866—1963
Keskinen, Allan R. 3,047,674. Recording and reproducing head for magnetic tape. **35**: 165—1963
Kikugawa, Ginzo. 3,003,384. Organ with motor-driven blower. **35**: 1103—1963
Kim, Ho June. 3,011,382. Musical instrument. **35**: 1101—1963
Kishi, Kanesuke, Kaname Nakatsuru, and Hirotake Kawakami. 3,053,339. Pipe microphone. **35**: 1307—1963
Kleesattel, Claus. 3,089,333. Amplitude measuring devices for high-frequency vibrations. **35**: 2052—1963
Klein, Walter W., Jr. 3,025,123. Variable density display for seismic data. **35**: 1107—1963
Kleinecke, Albert L. 2,984,315. Exhaust filter-muffler. **35**: 2038—1963
Kleinhans, Schuyler and Carl A. Weise. 3,084,507. Jet engine sound suppressor and reverser. **35**: 1872—1963
Kleis, Derk. 3,036,164. Echo effect recording. **35**: 1871—1963
Kline, John E. 2,939,250. Resonant honing. **35**: 1106—1963
Knott, Sydney T. (see Hersey, John B.). **35**: 2050—1963
Knudsen, Einer Kristian. 3,051,798. Device for the recording or reproduction of sound tracks. **35**: 163—1963
Knudsen, William C. 3,054,471. Acoustic filters for attenuating vertically propagated interference in borehole seismology. **35**: 1108—1963
Koidan, Walter. 3,054,864. Instrument for reciprocity calibration of electroacoustic transducers. **35**: 630—1963
Koorneef, Jacob (see Duinker, Simon). **35**: 440—1963
Kornei, Otto. 3,065,311. Magnetic transducer. **35**: 633—1963
Kowalyshyn, Stephen, Thomas A. Daly, and David A. Cooke. 3,045,626. Depth steering synchro assembly. **35**: 638—1963
Kozak, Edward J. 3,051,034. Music timing devices. **35**: 442—1963
Kramer, Justin A. 3,046,826. Single keyboard electronic carillon. **35**: 1677—1963
Krauss, Serge L. and Charles J. Tennes. 3,039,347. Percussive type electric musical instrument. **35**: 261—1963
Kriebel, Walter (see Ahrens, Erhard). **35**: 265—1963
Kristiansen, Frank T. and Harold W. Pexton. 3,064,333. Method of making a magnetic transducer. **35**: 1317—1963
Kritz, Jack. 2,931,223. Transducers for acoustic flowmeter. **35**: 444—1963
—— 2,978,899. Ultrasonic system for measuring the physical characteristics of a gas. **35**: 445—1963
Kröber, Klaus. 3,078,100. Tone arm for phonographs. **35**: 1308—1963
Krug, William H. 3,049,957. Instrument keying circuit. **35**: 1678—1963
Kruse, Ralph H., Howard N. Fawcett, and James D. Digby. 2,986,606. Recording with audible and visible monitoring. **35**: 764—1963
Kuester, Donald W. (see Thurston, Edward G.). **35**: 638—1963
Kühn, Hans-Robert (see Ahrens, Erhard). **35**: 948—1963
Kuhrt, Friedrich. 3,041,416. Transducer system for magnetic signals. **35**: 440—1963
Kullin, Melvin G. (see Germano, Carmen P.). **35**: 763—1963
Kunec, Michael G. (see Catlin, Beryl G.). **35**: 1105—1963
Kunz, Jacob T. 3,013,461. Method of tuning a musical tone generator bar. **35**: 1099—1963
—— 3,048,071. Electrical musical instrument having mechanically vibratable tone generators. **35**: 1678—1963
Kuris, Arthur (see Balamuth, Lewis). **35**: 1105—1963
Kutney, John T. 3,053,340. Noise suppression nozzle. **35**: 2043—1963

La Forest, Louis Z. 3,040,135. Dictating machines. **35**: 439—1963
Lamb, Thomas W. (see Vogel, Charles B.). **35**: 2050—1963
Landgraf, George W. 3,008,257. Method of embossing mineral wool acoustical panels. **35**: 628—1963
Landon, Hal D. 3,084,588. Bell chime operating mechanism. **35**: 1498—1963
Lang, Albert P. 3,029,080. Magnetic recording apparatus. **35**: 1869—1963
Lange, Hans-Georg (see Fischer, Georg). **35**: 1310—1963
—— (see Wehde, Henrich). **35**: 441—1963
Larson, Dale O. (see Johnson, Wesley R.). **35**: 1316—1963
Lasky, Marvin L. and Leo F. Fehlner. 3,039,077. Sonar dome unit. **35**: 264—1963
Latham, William S. and William F. Saars. 3,015,810. Magnetic recorder and reproducer. **35**: 1314—1963
Laux, David E. (see Sariti, Anthony A.). **35**: 2031—1963
Lawler, John A. 3,032,981. Noise suppressor and thrust reverser for jet engine nozzles. **35**: 2040—1963
—— **and William A. Reinhart.** 3,061,038. Jet engine noise suppression nozzle with multiple settings. **35**: 2043—1963
Lawrance, Richard B. 3,082,509. Method of constructing magnetic recording devices. **35**: 1318—1963
Lawrence, Baskin R. 2,996,685. Electronic tone signal generators. **35**: 1101—1963
Lazzery, Angelo G. 3,041,418. Transducers. **35**: 166—1963
Leadley, Wilfred P. (see Stovold, Frederick C.). **35**: 2034—1963
Leblanc, Leon. 2,971,423. Brace for musical instrument. **35**: 1101—1963
Lee, Burton D. 3,050,148. Geophysical exploration. **35**: 1108—1963
—— **and Alvin L. Parrack.** 2,989,596. Method and apparatus for obtaining constant speed drive for low-speed recorders. **35**: 1311—1963
—— **and Sam L. Wilkinson.** 3,040,294. Method and apparatus for analyzing a reproducible seismic record. **35**: 2047—1963
—— (see Walker, Hugh O., Jr.). **35**: 1106—1963
Lee, James Alexander. 3,048,407. Disc-record playing apparatus. **35**: 630—1963
Lee, Yih-Hung. 3,062,540. Noise maker. **35**: 760—1963
Lees, Sidney. 3,008,334. Accelerometer. **35**: 768—1963
LeFrancois, John E. (see Bland, Richard E.). **35**: 1320—1963
Lehr, Philip N. 3,072,754. Hearing aid device. **35**: 760—1963
Leiss, William J. (see Bland, Richard E.). **35**: 1320—1963
Lemelson, Jerome H. 3,064,389. Sound producing mechanism. **35**: 761—1963
Lemon, Cecil George. 3,035,657. Acoustic panel. **35**: 1096—1963
Leonhardt, Charles G. 2,994,332. Apparatus for ultrasonic cleaning. **35**: 1105—1963
—— **and Brian E. Baldwin.** 3,007,478. Ultrasonic cleaner. **35**: 1105—1963
Leslie, Donald J. 3,041,910. Electrical circuit arrangement for complex wave generators. **35**: 262—1963
—— 3,049,040. Apparatus for minimizing beat effects. **35**: 1678—1963
—— 3,058,541. Rotary electrostatic speaker. **35**: 634—1963
Levin, Simon. 2,979,572. Apparatus for recording and reproducing magnetic information. **35**: 763—1963
Lewis, Reynold H. 3,083,605. Magnetic pickup for the bass section of accordion. **35**: 1499—1963
Lewis, Robert C. (see Efromson, Philip C.). **35**: 952—1963
Leyton, Eric M. 2,979,558. Recording and reproducing system. **35**: 439—1963
Liebermann, Leonard N. 3,046,780. Hydrophone fluid condition monitor. **35**: 637—1963
Lingel, Frederick J. (see Jones, Albert C.). **35**: 1498—1963
Lippel, Bernard. 2,965,879. Sound locating means. **35**: 437—1963
Locklin, Charles R. 3,005,057. Multiple duplicating tape recorder. **35**: 632—1963
Lockwood, William H. and Henry Peters. 3,040,386. Method of fabricating a laminated magnetic recording sleeve. **35**: 439—1963
Lo Duca, Thomas S. 3,001,434. Keyboard for chord organ. **35**: 261—1963
Loewe, Siegmund and Werner Zorn. 3,029,033. Sound recording and reproducing device. **35**: 1869—1963
Lombard, Adrian Albert and Wilfred Henry Wilkinson. 3,065,818. Jet noise suppressor nozzle. **35**: 2044—1963
Long, George B. (see Gelfand, Louis). **35**: 1105—1963
Lord, John B. 3,054,004. Piezoelectric crystal holder. **35**: 765—1963
Lorenz, Alfred E. 3,047,672. Magnetic record transducer apparatus. **35**: 165—1963
Loughborough, William B. 3,055,253. Tympanic type musical instrument. **35**: 442—1963
Loveless, Vernon O. and Robert C. Staats. 3,029,644. Accelerometers. **35**: 636—1963
Lover, Seth E. and Theodore M. McCarty. 3,069,954. Metallic stringed musical instruments. **35**: 950—1963
Lovett, Joseph Leonard. 2,998,591. Audible fish alarms. **35**: 638—1963
Lubkin, Samuel, Leon R. Mock, and Tarik M. Rasdal. 2,998,292. Mounting of multi-channel magnetic transducer heads. **35**: 632—1963
Lubnow, Harold A. 3,048,816. Low frequency underwater sound generator. **35**: 637—1963
Ludwig, William Frederich. 2,979,981. Drumhead construction. **35**: 166—1963
Lyman, Joseph (see Goshen, Charles E.). **35**: 767—1963
Lynott, John J. 3,031,532. Magnetic transducer mounting. **35**: 164—1963
Lyon, George Albert. 3,029,895. Muffler structure. **35**: 2040—1963
—— 3,029,896. Muffler structure with baffle means. **35**: 2040—1963
Lyon, William H. 3,086,089. Method and means for reproducing signals from a very slow moving tape. **35**: 1319—1963
—— **and Frank E. Runge.** 3,078,350. Miniature magnetic tape. **35**: 1317—1963

Macdonald, James R. 3,061,675. Loud speaker improvement. **35**: 629—1963
Maclay, William R. and Harry Charnetsky, Jr. 3,086,088. Magnetic transducer with shoe-equipped floating head. **35**: 1319—1963
Magnus, Finn H. 3,063,326. Reed organ. **35**: 766—1963
Mair, James. 3,022,985. Silencer and heat recovery system. **35**: 2039—1963
Mallard, Richard Henry. 3,055,663. Sound reproducing machines. **35**: 164—1963
Manganne, René (see Mattei, Jean I.). **35**: 437—1963
Manning, Dennis J. 3,028,450. Gas leak detection apparatus. **35**: 437—1963
March, John J. 3,019,850. Prefabricated insulated duct and sound trap. **35**: 950—1963
Maris, Elwood S., Sr. (see Andrews, Dallas R.). **35**: 1868—1963
Markowitz, Jerome. 3,037,413. Electronic organ with transient speech effects. **35**: 1677—1963
Marks, Albert B. 3,056,464. Calibration and handling device for acoustic logging instruments. **35**: 1109—1963
Marks, Wilbur. 3,066,279. Sonic ship speed indicator. **35**: 952—1963

Martin, Albert E., Donald Mounfield, and John Smart. 2,963,899. Sonic gas analysers. **35**: 436—1963
Martin, Daniel W. 3,039,346. Sound distribution system. **35**: 261—1963
Martin, Richard F. (see Hallene, Alan M.). **35**: 2051—1963
Martner, Samuel T. and Neil R. Sparks. 3,065,814. Seismic weathering correction. **35**: 2050—1963
Mash, Derek Hubert. 3,030,540. Conversion of sonic into luminous effects. **35**: 2036—1963
Mason, Russell I. (see Wainwright, Walter N.). **35**: 1110—1963
Mason, Warren P. 3,012,211. Microwave ultrasonic delay line. **35**: 1874—1963
Masonson, Martin. 2,906,956. Correlation system. **35**: 1675—1963
Massa, Frank. 3,090,939. Tessellated electromechanical transducer element. **35**: 2052—1963
Matsuoka, Earl. 3,059,720. High frequency loudspeakers. **35**: 629—1963
Mattei, Jean I. and René Manganne. 2,925,582. Acoustical firing indicator. **35**: 437—1963
Maxey, Alexander R. 2,998,495. Recording and reproducing high frequencies transversely on a magnetic tape. **35**: 1312—1963
May, John E., Jr. 2,957,142. Ultrasonic delay line. **35**: 1873—1963
Maytner, Stephen P. 3,027,710. Methods and apparatus for suppressing jet noise. **35**: 2040—1963
Mazzagatii, Roy P. 3,051,927. Transducer assemblies. **35**: 2048—1963
Mazzeo, Rosario. 3,035,473. Clarinet. **35**: 2037—1963
McCarrell, Stuart G. and Harry A. Wayne. 3,061,689. Hearing aid. **35**: 435—1963
McCarter, Ed R. and Robert L. Wilcox. 3,028,579. Analog card programming device. **35**: 1107—1963
McCarty, Theodore M. (see Lover, Seth E.). **35**: 950—1963
McClelland, Harold M. 3,040,445. Synchronized sonar trainer. **35**: 264—1963
McClure, Carroll D. 3,064,753. Repetitive seismic wave source. **35**: 2050—1963
McCoy, John Harvey and Walter H. Greenberg. 3,038,551. Self-damping material and sonar dome formed therefrom. **35**: 166—1963
McGaughey, William C. 2,937,522. Ultrasonic rail weld scanner. **35**: 444—1963
McGowen, Harold E., Jr. 3,020,354. Storing tape in a tubular tape recorder. **35**: 1496—1963
McIntyre, Robert J. (see McIntyre, Thomas F.). **35**: 1101—1963
McIntyre, Thomas F. and Robert J. McIntyre. 3,015,981. Clarinets. **35**: 1101—1963
McKaig, Merle B. 2,989,594. Magnetic tape recording and reproducing machine. **35**: 1310—1963
McLoughlin, James H. 3,043,096. Exhaust gas purifier and muffler. **35**: 2042—1963
Meinema, Herbert E. 3,037,414. Artificial reverberation control apparatus. **35**: 1677—1963
Meitzler, Allen H. 3,041,556. Ultrasonic strip delay line. **35**: 262—1963
Mendenhall, Harold L. and Sam D. Elliott. 3,040,833. Seismic exploration. **35**: 1108—1963
Menuhin, Yehudi and Erno Meir Goldberger. 3,090,275. Violin with chin rest. **35**: 2037—1963
Menzel, Donald H. and Thomas Gold. 3,034,594. Method of seismic exploration and apparatus therefor. **35**: 1107—1963
Menzel, Wolfgang A. 3,016,736. Damping coefficient measuring instrument. **35**: 443—1963
Meri, Kalju (see Westerfeld, Ralph). **35**: 1495—1963
Merkel, Louis J. 3,001,433. Piano back structure. **35**: 261—1963
Merry, John M. P. 3,081,381. Transversely scanning transducer with fixed electromagnet and moving pole pieces. **35**: 2035—1963
Metz, Jack L. 2,999,906. Magnetic recorder head. **35**: 1313—1963
Meyer, Albert. 3,049,959. Obtaining ensemble and celeste effects in electrical musical instruments. **35**: 1679—1963
Mezzacappa, Antonio Libero. 3,059,348. Method and apparatus for teaching languages. **35**: 766—1963
Mies, Arno (see Ahrens, Erhard). **35**: 265—1963
Miessner, Benjamin F. 2,994,239. Tuned-vibrator musical instrument. **35**: 1100—1963
—— 3,007,363. Tone generator. **35**: 1103—1963
—— 3,038,363. Electronic piano. **35**: 1677—1963
—— 3,041,909. Electronic piano. **35**: 262—1963
Miles, Oliver C. (see Haslam, Maurice B.). **35**: 440—1963
Miller, Harvey G. 3,002,390. Accelerometer. **35**: 635—1963
Miller, R. Earl. 2,980,439. Resilient suspension system and stress absorbing units therefor. **35**: 951—1963
Miller, Wade M. 3,050,584. Conference telephone apparatus. **35**: 166—1963
Minton, Stanley J. (see French, Edward P.). **35**: 2043—1963
Mitchell, Ulyss S. 3,025,010. Magnetic tape cartridge. **35**: 1867—1963
Mock, Leon R. (see Lubkin, Samuel). **35**: 632—1963
Moehring, William D. 3,005,879. Binaural magnetic pickup heads. **35**: 632—1963
Molloy, Martin and Zygmund Shabad. 3,054,863. Magnetic feedback suppression between battery-cell and a transistor amplifier. **35**: 160—1963
Montgomery, John R. (see Roberts, Frederick W.). **35**: 441, 1867—1963
Moore, Charles O. and John O. Van Tassel. 3,023,798. Noiseless tread portion for tire casing. **35**: 2045—1963
Morgan, George Leonard. 3,048,408. Turntables of record players. **35**: 630—1963
Morgan, James J. 3,046,792. Accelerometer with velocity and distance integrating means. **35**: 263—1963
Moriya, Ikuro. 3,020,355. Magnetic recording and reproducing system. **35**: 1496—1963
Morris, Maron L. (see Brewer, Thomas L.). **35**: 628—1963
Morrish, Leonard M. and Lloyd E. Mueller. 2,985,252. Exhaust muffler. **35**: 2038—1963
Moschino, Mario. 3,067,645. Bass section for accordion or the like. **35**: 634—1963
Moses, Edmund Quincy (see Thatcher, Charles J.). **35**: 2046—1963
Moulic, William E., Jr. 3,084,226. Amplifying and oscillating circuit. **35**: 1319—1963
Mounfield, Donald (see Martin, Albert E.). **35**: 436—1963
Mueller, Lloyd E. (see Morrish, Leonard M.). **35**: 2038—1963
Murden, Peter. 3,036,232. Electro-mechanical transducers. **35**: 161—1963
Murphy, Howard E. (see Kabell, Louis J.). **35**: 1315—1963
Musser, Clair Omar. 3,058,384. Visual tuning device for stringed instruments. **35**: 634—1963
Muszynski, Francis. 3,079,719. Duck decoy. **35**: 1097—1963

Nagata, Kuniichi and Kiyoshi Obara. 3,087,989. Vowel synthesizer. **35**: 1873—1963
Nakatsuru, Kaname (see Kishi, Kanesuke). **35**: 1307—1963
Namenyi-Katz, Laszlo. 2,995,287. Magnetic tape recorder. **35**: 1312—1963
—— 2,995,313. Magnetic recording or reproducing devices. **35**: 1312—1963
—— 3,032,287. Magnetic tape recorders. **35**: 1870—1963

—— 3,032,613. Cassettes for magnetic recorders and recorders for use with these. 35: 2032—1963
Namikawa, Mamoru (see Hoshino, Yasushi). 35: 1313 (2 patents), 1316—1963
Neumann, Helmut and Peter Drost. 3,037,092. Storing television signals. 35: 2033—1963
Neville, Richard G. 3,048,666. Transducer with low microphonics. 35: 165—1963
Nierzwicki, Raymond C. (see Bergh, Thomas R.). 35: 1674—1963
Nolte, Vernon A. (see Bailey, Fred L.). 35: 442—1963
Nowlan, Michael J. 3,020,357. Resonant circuitry for a transducer head. 35: 1496—1963
—— 3,037,093. Magnetic recording and reproducing apparatus. 35: 2033—1963
—— 3,068,326. Magnetic recording and reproducing apparatus. 35: 765—1963
Nye, William M. 2,988,604. Recording and reproducing system. 35: 1310—1963
—— 3,024,320. Dictating machine erasure unit. 35: 1316—1963

Obara, Kiyoshi (see Nagata, Kuniichi). 35: 1873—1963
Obata, Gyo. 3,002,233. Auditorium structures. 35: 627—1963
O'Brien, Richard J. (see Gratian, Joseph W.). 35: 1497—1963
Okrain, Lazar. 3,074,307. Musical toys. 35: 1099—1963
Olmstead, Van D. 3,016,233. Ultrasonic fuel and air mixer. 35: 1105—1963
Olson, Harry F. 3,007,012. Directional electrostatic microphone. 35: 1306—1963
Oppenheim, Arthur (see Sanders, Guy J.). 35: 1104—1963
Orlacchio, Anthony W. 3,045,131. Accelerometer. 35: 263—1963
Orlick, Adolph and John Orlick. 3,087,259. Educational toy device for teaching alphabets or the like by sound. 35: 2037—1963
Orlick, John (see Orlick, Adolph). 35: 2037—1963
Orsolini, Frank D. 3,059,517. Accordion attachment for treble grill. 35: 262—1963
Osborne, Fred H., Christian L. Flateau, and Anthony C. Ippolito. 3,080,456. Coin controlled tape player. 35: 2035—1963
Owner, John Lechmere (see Archer, John). 35: 1870—1963

Padberg, Louis R., Jr. 3,077,944. Pneumatic sound source. 35: 1111—1963
Palic, Petar. 3,084,011. Magnetic recording of measuring processes. 35: 1871—1963
Pardue, Don R. (see Hedrich, Albert L.). 35: 443—1963
Parker, William H. (see Huckabay, William B.). 35: 2052—1963
Parmenter, Richard. 3,084,651. Silencer for ships. 35: 1500—1963
Parrack, Alvin L. (see Itria, Oswald A.). 35: 1108—1963
—— (see Lee, Burton D.). 35: 1311—1963
Parris, George F. 3,060,278. Dictating machine. 35: 1317—1963
Parzen, Benjamin. 3,033,480. Magnetic tape recorder and reproducer. 35: 1870—1963
Paull, Charles F. and Robert H. Chorpenning. 3,007,013. Microphone construction. 35: 1307—1963
Pavlak, Walter A. 3,066,200. Speaker device. 35: 630—1963
Pearson, Charles, Jr. 3,057,244. Put-together toy piano. 35: 634—1963
Pegard, Pierre. 2,976,962. Vibration damping device. 35: 634—1963
Peltz, Kenneth J. 3,071,884. Vibrasonic fishing lure. 35: 1110—1963
Percival, William S. 3,059,053. Stereophonic sound transmission systems. 35: 630—1963
Peters, Charles J. 3,084,227. Magnetic tape transducer. 35: 1497—1963
Peters, Henry (see Lockwood, William H.). 35: 439—1963
Peters, Melville F. 3,038,553. Flexible coupling and sound attenuating assemblies. 35: 263—1963
—— 3,061,039. Fluid line sound-absorbing structures. 35: 767—1963
Peterson, Ben B. (see Buell, Roy D., Jr.). 35: 2045—1963
Peterson, Glen. 3,001,065. Method and means of transducing elastic waves. 35: 636—1963
Peterson, Richard H. 3,038,365. Electronic organ. 35: 1677—1963
Petrie, Adelore F. 3,072,213. Loudspeaker cone suspension. 35: 1306—1963
Pexton, Harold W. (see Kristiansen, Frank T.). 35: 1317—1963
Pezaris, Constantine D. (see Dimitracopoulos, Panayotis C.). 35: 1308—1963
Pfost, Robert F. 3,020,359. Tape transducing apparatus. 35: 1496—1963
Phelps, Clyde H. 2,974,521. Vibration measuring apparatus. 35: 767—1963
Philippi, Robert C. (see Brown, Milton G.). 35: 628—1963
Pieplow, Hans-Werner, Helmut Haas, and Helmut Harnisch. 3,035,786. Sound tape apparatus. 35: 1870—1963
Pigman, Marcus E. 3,062,317. Spiral muffler. 35: 2044—1963
Pitzer, Robert L. and Edward H. Rehnborg. 3,010,324. Accelerometer. 35: 769—1963
Planer, George Victor and Robert William Windebank. 3,061,771. Transducers. 35: 762—1963
Plassmeyer, Louis Edward. 3,001,532. Ultrasonic degreasing apparatus. 35: 1105—1963
—— 3,001,769. Ultrasonic degreaser. 35: 1105—1963
Pope, Kenneth E. 3,048,042. Accelerometer. 35: 636—1963
Porratz, Louis R. (see Bachman, William S.). 35: 164—1963
Post, Daniel. 3,040,583. Optical pressure transducer. 35: 2037—1963
Potter, Charles. 3,075,609. Noise suppressor. 35: 2045—1963
Pötzl, Günter. 3,002,411. Control elements for electronic musical instruments. 35: 1102—1963
Powers, Walter H. 2,990,028. Automotive muffler. 35: 2039—1963
—— 3,036,654. Muffler construction. 35: 2041—1963
—— 3,036,655. Muffler. 35: 2042—1963
—— **and Benton D. Jacokes.** 3,064,336. Method of making mufflers. 35: 2044—1963
Pratt, Samuel O. 3,051,033. Body sheli and sounding box structure for harps. 35: 443—1963
Press, Frank (see Walker, Hugh O., Jr.). 35: 1106—1963
Preston, John (see Bleasey, John C.). 35: 1306—1963
Pritchard, Hugh Edwin. 2,988,170. Air cleaner and silencer. 35: 2039—1963
Pritchard, Peter Ernest. 3,062,925. Phonograph pickup cartridge and replaceable stylus therefor. 35: 632—1963
Procházka, Miroslav. 2,995,928. Indicator of torsional oscillations. 35: 635—1963
Pruden, Robert G. 3,047,090. Tuned acoustical device. 35: 161—1963

Quednau, Walter J. 3,048,074. Piano action. 35: 1676—1963

Radocy, Frank. 2,993,096. Erasing means for magnetic recording. 35: 1311—1963
Ranseen, Emil L. (see Banning, Thomas A., Jr.). 35: 762—1963
Rasdal, Tarik M. (see Lubkin, Samuel). 35: 632—1963

Razis, Andre. 3,070,322. Composite magnetic recorder device. **35**: 1317—1963
Redding, Vernon L. (see Clifford, Edward L.). **35**: 1109—1963
Redfield, George E. 3,027,111. Recording and reproducing apparatus. **35**: 1868—1963
Reed, Frank J. 3,029,032. Equipment for use with magnetic tape records. **35**: 1868—1963
Reed, Thomas F. (see Coleman, William E.). **35**: 1106—1963
Reese, James D. 2,989,137. Muffler construction. **35**: 2039—1963
—— 2,989,138. Exhaust muffler. **35**: 2039—1963
Reesor, Thomas W. 3,046,329. Stereo sound system for TV. **35**: 162—1963
Reher, Helmut and Hans-Günther Frerichs. 3,026,380. Transistorized reproducing amplifier circuitry having feedback. **35**: 1316—1963
Rehnborg, Edward H. (see Pitzer, Robert L.). **35**: 769—1963
Reifel, Harry. 3,083,607. Tuning fork type oscillators. **35**: 1498—1963
—— **and Gerald Karon.** 3,084,235. Tuning fork type relays. **35**: 1498—1963
Reindl, Joseph. 3,082,840. Muffler. **35**: 2045—1963
Reinhart, William A. (see Grotz, Charles A.). **35**: 2043—1963
—— (see Lawler, John A.). **35**: 2043—1963
Reinthaler, Karl. 3,027,423. Microphone arrangement. **35**: 1307—1963
—— (see Görike, Rudolf). **35**: 1307—1963
Renaut, Paul. 2,946,904. Ultrasonic transducer arrangement for sending and receiving. **35**: 1098—1963
—— 3,069,574. Piezoelectric transducer. **35**: 950—1963
Retter, Eugene O. 3,081,662. Musical instrument string divider. **35**: 1320—1963
Richards, David C. 3,055,450. Counterflow detonation system. **35**: 1109—1963
Richardson, Avery G. 3,020,358. Magnetic recording and reproducing apparatus. **35**: 1496—1963
Richter, Erhard (see Ahrens, Erhard). **35**: 948—1963
Richter, Friedrich. 3,076,173. Echo sounding apparatus. **35**: 1110—1963
Rink, Charles N. (see Sanders, Guy J.). **35**: 1104—1963
Rinker, Carl G. 3,070,791. Chord chime. **35**: 948—1963
Riopelle, Arthur J. (see Fletcher, John L.). **35**: 760—1963
Riordan, Hugh E. 3,046,793. Hydraulic averaging accelerometer. **35**: 263—1963
Robbins, Jack W. 3,017,798. Clarinets. **35**: 1101—1963
Roberts, Frederick W., Lloyd R. Jones, Alfred L. Di Mattia, and Roger C. Curtis. 3,051,795. Failure detecting and indicating means for sound recording systems. **35**: 163—1963
——, **John R. Montgomery, and Frederick W. Schueler.** 3,024,319. Single or repetitive reproduction of sound signals on a loop-shaped record. **35**: 1867—1963
——, **John R. Montgomery, and Douglas B. Tiffany.** 3,052,762. Backspacing apparatus for transcribing machines. **35**: 441—1963
Robins, Robert Hill. 3,059,130. Electromechanical transducers. **35**: 766—1963
Robinson, Charles F. 2,952,153. Acoustical apparatus for gas detection. **35**: 436—1963
Rod, Robert L. (see Church, Donald R.). **35**: 1098—1963
Rojprasit, Adisaun. 3,060,264. Amplifier. **35**: 628—1963
Romberg, Francis M. 3,039,558. Delayed initiation of seismic wave generation. **35**: 1108—1963
Ronci, John J. 3,062,926. Magnet with vibratile armature. **35**: 1305—1963
Roney, Richard N. 3,027,690. Ultrasonic machine. **35**: 1106—1963
Rork, Wallace G. and James I. Garner. 3,048,997. Angular accelerometer calibrator. **35**: 636—1963
Rosen, Charles A. 2,974,296. Electromechanical transducer. **35**: 1098—1963
Rosenblatt, Leonard (see Berger, Stanley). **35**: 2032—1963
Rosenfeld, Murray M. 3,068,328. Pressure gradient transducers. **35**: 1308—1963
Rosenthal, Adolph H. and Sophie Tinto. 3,035,491. Ultrasonic light modulator cell assembly. **35**: 2036—1963
Rothe, Paul-Gerhard. 3,037,091. Wide frequency band recording and reproducing system. **35**: 2033—1963
Ruehlmann, Herbert E. (see Bianchi, Renato). **35**: 260—1963
Runge, Frank E. (see Lyon, William H.). **35**: 1317—1963
Rupp, Karl. 3,037,569. Magnetic recording and reproducing apparatus. **35**: 2033—1963

Saars, William F. (see Latham, William S.). **35**: 1314—1963
Sampson, Sidney O. 2,976,372. Magnetic tape reproducing system. **35**: 438—1963
Sanders, Guy J., Charles N. Rink, and Arthur Oppenheim. 3,033,307. Noise attenuating apparatus. **35**: 1104—1963
Sanford, Robert F. 3,084,224. Magnetic recording. **35**: 1318—1963
Sariti, Anthony A. and David E. Laux. 3,085,806. Dual stylus phonograph pickup. **35**: 2031—1963
Sato, Minoru (see Hoshino, Yasushi). **35**: 1316 (2 patents)—1963
Savage, Kerry D. and Lloyd E. Elliott. 3,071,203. Acoustical velocity well logging. **35**: 2051—1963
Scarpa, Thomas J. 2,995,689. Ultrasonic control circuit. **35**: 444—1963
Scarrott, Gordon George. 3,011,136. Electro-acoustic delay-line. **35**: 1873—1963
Scherer, Karl. 3,002,413. Key mounting for musical instruments. **35**: 1100—1963
—— 3,030,845. Sound head for musical wind instrument. **35**: 2037—1963
Schilling, Arthur R. and Herman W. Erichsen. 3,025,359. Vibration-compensated pressure sensitive microphone. **35**: 1307—1963
Schroeder, Alfred Christian. 2,979,557. Recording and reproducing system. **35**: 439—1963
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Temple piece for spectacles hearing aid. Ellis F. Joy. 35: 760—1963

4.6 Loudness, Threshold Determinations

PAPERS
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Bone-conduction thresholds for sonic and ultrasonic frequencies. John F. Corso. 35: 1738—1963
Cumulation of DL's for intensity change at low sensation levels. Peter J. Dallos and Raymond Carhart. 35: 848—1963
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Experiments in bone–air cancellation. Ernest L. Smith and Howard S. Bowman. 35: 1906—1963
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ERRATA
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4.7 Masking. (See also 5.5.)

PAPERS
Auditory unmasking. Michel Treisman. **35**: 1256—1963
Equalization and cancellation theory of binaural masking-level differences. N. I. Durlach. **35**: 1206—1963
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Some effects on listener accuracy of competing messages varied systematically in number, rate, and level. D. D. Hogan and T. D. Hanley. **35**: 293—1963
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Temporal summation for tones in narrow-band noise. E. Zwicker and H. N. Wright. **35**: 691—1963

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Cyclical masking of clicks by low-frequency tones. Gerard M. Shickman. **35**: 787—1963
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Spread of masking in ears showing abnormal adaptation. F. Harbert and I. M. Young. **35**: 787—1963

4.8 Phase Effects. (See also 4.3.)

PAPERS
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Binaural interaction of a click with a click pair. Gerard G. Harris, James L. Flanagan, and Bernard J. Watson. **35**: 672—1963

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ABSTRACTS
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4.9 Pitch

PAPERS
Compensatory and pursuit tracking of pitch. J. Donald Harris, Andrew G. Pikler, and Jerome E. Murphy. **35**: 581—1963
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Single estimates of pitch magnitude. Jacob Beck and William A. Shaw. **35**: 1722—1963
Some analogies between pitch and lateralization phenomena. Jan Nordmark. **35**: 1544—1963
Three experiments concerned with pitch perception. Georg von Békésy: **35**: 602—1963

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Detectability of missing pitch periods in speech. Sheldon B. Michaels. **35**: 1877—1963
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Pitch perception of randomly triggered pulse pairs. Max E. McClellan and Arnold McC. Small, Jr. **35**: 1881—1963

ERRATA
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4.10 Subjective Tones

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Nonlinearity of the middle ear as a possible source of subharmonics. William Pong and William Marcaccio. **35**: 679—1963
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4.11 Theories of Hearing

PAPERS

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Tonal thresholds for short-duration stimuli as related to subject hearing level. Lois L. Elliott. **35**: 578—1963

Transfer function of the middle ear. Aage R. Møller. **35**: 1526—1963

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ABSTRACTS

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ERRATA

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4.12 Timbre

PAPERS

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4.13 Ear Acoustical Impedance

PAPERS

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Transfer function of the middle ear. Aage R. Møller. **35**: 1526—1963

SUBTITLES

Ear acoustical impedance. J. Zwislocki. **35**: 1037—1963

4.14 Ear Protectors, Earplugs

PAPERS

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ABSTRACTS

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SUBTITLES

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PATENTS

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Ear canal insert. John D. Henderson. **35**: 1097—1963

Ear pad and ear phone support for helmets. Henry P. Heisig. **35**: 2031—1963

Ear pads. Robert E. Ulrich and Everett R. Ware. **35**: 1866—1963
Ear plugs. Jozef J. Zwislocki. **35**: 160—1963
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ERRATA
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4.15 Perception of Signals. Detection of Signals in Noise

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SUBTITLES
Perception of signals. Andrew Sekey. **35**: 685—1963

PATENTS
Correlation system. Martin Masonson. **35**: 1675—1963

5. Applied Acoustics, Instruments and Apparatus. (See also 2.8, 4.5, 9.6, 10.3, 12.3, 12.3p, 12.3Z, 13.11, 13.11n, and 13.11t.)

5.1 General, Unclassified

PATENTS
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Acoustic alarm device. Albert Hagger. **35**: 435—1963
Acoustic testing instrument. Paul S. Veneklasen and Finn Jorgensen. **35**: 436—1963
Chord chime. Carl G. Rinker. **35**: 948—1963
Duck decoy. Francis Muszynski. **35**: 1097—1963
Gas leak detection apparatus. Dennis J. Manning. **35**: 437—1963
Noise maker. Yih-Hung Lee. **35**: 760—1963
Phonocardiography apparatus. Marvin J. Seven, Raymond P. Seven, and Harry J. Venema. **35**: 160—1963
Sonic gas analysers. Albert E. Martin, Donald Mounfield, and John Smart. **35**: 436—1963
Sound device signalling the beginning of the exhaustion of a liquid gas bottle. Giovanni Enrico. **35**: 436—1963
Sound producing device for toys for imitating voices, particularly of birds. Fritz Collischan. **35**: 761—1963
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5.2 Amplifiers and Attenuators

ABSTRACTS
High-performance, automatic level-controlling amplifier. George A. Hellwarth and David H. Beetle, Jr. **35**: 781—1963

PATENTS
Amplifier. Adisaun Rojprasit. **35**: 628—1963

Amplifier system for stereo sound. Robert B. Gray. **35**: 161—1963
Microphone preamplifier. Robert P. Crow and Gilbert J. Vollink. **35**: 761—1963
Transistor amplifier circuit. James J. Davidson. **35**: 761—1963

5.3 Acoustic Impedance Measurement. (See also 11.4 and 12.3Z.)

PAPERS
A portable impedance tube. Raymond D. Berendt and Henry A. Schmidt, Jr. **35**: 1049—1963
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ABSTRACTS
ZYP—an automatic impedance and admittance plotter. Harry A. Schenck. **35**: 774—1963

5.4 Analyzers and Filters, Acoustic and Electric. Oscillographs. (See also 5.15 and 12.3f.)

PAPERS
Gaussian-filter spectrum analyzer. Cyril M. Harris and William M. Waite. **35**: 447—1963

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Frequency-dividing networks. Lawrence Fleming. **35**: 1454—1963
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ABSTRACTS
Quincke-tube acoustic filter for fluid ducts. E. L. Hixson and J. V. Kahlbau. **35**: 1895—1963
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Speech-formant measurement with a continuously tuned automatic tracking filter. George A. Hellwarth. **35**: 789—1963

SUBTITLES
Filters. Roger M. Golden. **35**: 1359—1963

PATENTS
Electro-mechanical transducers. Peter Murden. **35**: 161—1963
Frequency multiplication. Marvin A. Stern. **35**: 1305—1963

5.5 Audiometers. (See also 4.4 and 4.5.)

ABSTRACTS
Evaluation of a new artificial mastoid as an instrument for the calibration of audiometer bone-conduction systems. Wayne O. Olsen and Jay W. Sanders. **35**: 1906—1963
Use of the Békésy audiometer in animal research. R. J. Voots, S. N. Reger, R. Hinchcliffe, and J. E. Watson. **35**: 1908—1963

SUBTITLES
Audiometers. Charles S. Watson. **35**: 168—1963

PATENTS
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5.7 Frequency Standards, Frequency Measuring and Recording Instruments

PATENTS
Vibrating reed electro-responsive device. Arthur W. Daschke. **35**: 1097—1963

5.8 Loudspeakers, Horns. (See also 5.13, 5.17, and 5.18.)

ABSTRACTS
Crossover problems in two-way loudspeaker systems. Paul S. Veneklasen. **35**: 775—1963

SUBTITLES
Horns. J. N. Cole, R. G. Powell, H. L. Oestreicher, and H. E. von Gierke. **35**: 178—1963

PATENTS
Acoustical apparatus. John C. Bleasey and John Preston. **35**: 1306—1963
Acoustic resonant cabinet. Robert Y. Chapman. **35**: 1305—1963
Blast-proof water-proof loudspeaker. Philip B. Williams, Harry E. Allen, and Charles R. Hohmann. **35**: 1306—1963
Boat radio speaker amplifier and protector. Tivis R. Bailey **35**: 629—1963
Column speakers suitable for use in public address systems. Michael L. Berry. **35**: 161—1963
Device for the radiation of sound waves. Albert A. W. J. Van Hedel. **35**: 1305—1963
High fidelity audio system. Daniel E. Winkler. **35**: 161—1963
High frequency loudspeakers. Earl Matsuoka. **35**: 629—1963
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Loudspeaker. Reuben Guss. **35**: 162—1963
Loudspeaker. Walter C. Trautman. **35**: 1306—1963
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Loudspeakers. Cecil E. Watts. **35**: 161—1963
Magnet with vibratile armature. John J. Ronci. **35**: 1305—1963
Self-correcting, high fidelity, sound reproducing apparatus. Wheeler M. Turner. **35**: 628—1963
Sound reproducing device. John L. Wirth. **35**: 629—1963
Sound reproducing system. Donald Arany. **35**: 161—1963
Speaker. Stanley F. White. **35**: 161—1963
Speaker device. Walter A. Pavlak. **35**: 630—1963
Speaker enclosure. David Arden. **35**: 629—1963
Speaker mounting device. Tadashi Igarashi. **35**: 161—1963
Stereophonic sound reproducing system. Harrison E. Dow. **35**: 629—1963
Transducer with impedance-matching bridge. Robert Adler. **35**: 628—1963
Transducing apparatus. Philo T. Farnsworth, III. **35**: 1306—1963
Tuned acoustical device. Robert G. Pruden. **35**: 161—1963

5.9 Microphones. Microphone Calibration Equipment and Techniques. (See also 5.18, 12.3p, and 13.11t.)

PAPERS
Electrostatic microphones with electret foil. G. M. Sessler. **35**: 1354—1963
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ABSTRACTS
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Condenser microphones with electret foil. G. M. Sessler and J. E. West. **35**: 1878—1963
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Solion infrasonic microphone. Joseph L. Collins, William C. Richie, and G. Earle English. **35**: 1878—1963
Transistor microphone. M. E. Sikorski. **35**: 780—1963

SUBTITLES
Microphones. E. F. Carome and J. B. Lastovka. **35**: 647—1963

PATENTS
Acoustically compensated microphone with adjustable acoustic resistance. Frank Swinehart. **35**: 761—1963
Apparatus for transmitting sound from a baseball field. James S. Sellers. **35**: 1307—1963
Directional electrostatic microphone. Harry F. Olson. **35**: 1306—1963
Electroacoustic transducer. Robert K. Duncan. **35**: 1307—1963
Electrostatic microphone. Rudolf Görike. **35**: 1307—1963
Hot wire auditory device. John R. Dale. **35**: 1675—1963
Instrument for reciprocity calibration of electroacoustic transducers. Walter Koidan. **35**: 630—1963
Microphone arrangement. Karl Reinthaler. **35**: 1307—1963
Microphone construction. Charles F. Paull and Robert H. Chorpenning. **35**: 1307—1963
Pipe microphone. Kanesuke Kishi, Kaname Nakatsuru, and Hirotake Kawakami. **35**: 1307—1963
Pressure gradient transducers. Murray M. Rosenfeld. **35**: 1308—1963
Small-size condenser microphone. Rudolf Görike. **35**: 1307—1963
Sound transducer system. John Paul Jones, Jr. **35**: 1097—1963
Switching device combined with sound transducer. Rudolf Görike and Karl Reinthaler. **35**: 1307—1963
Transducer suspension system. Erwin M. Weiss. **35**: 761—1963
Vibration-compensated pressure sensitive microphone. Arthur R. Schilling and Herman W. Erichsen. **35**: 1307—1963
Waterproof inertial type microphone. Donald P. Ward. **35**: 1307—1963

5.10 Navigational Instruments Using Air Sound. Altitude Measuring Instruments. Sound Ranging (for Underwater Ranging see 13.11n)

PATENTS
Acoustic airspeed indicator. Austin N. Stanton. **35**: 437—1963
Acoustical firing indicator. Jean I. Mattei and René Manganne. **35**: 437—1963
Muzzle blast sound wave detection apparatus. James Snyder. **35**: 437—1963
Sonic altimeter. James A. Wippert. **35**: 162—1963
Sound discriminating device. John V. Atanasoff. **35**: 761—1963
Sound locating means. Bernard Lippel. **35**: 437—1963

5.13 Public Address Systems and Sound Picture Installations

ABSTRACTS
Crossover problems in two-way loudspeaker systems. Paul S. Veneklasen. **35**: 775—1963
Electronic room-acoustic fundamentals. John E. Volkmann. **35**: 786—1963
Sound reinforcement for a touring musical show. David H. Kaye. **35**: 775—1963

PATENTS
Anti-feedback system. John L. Faherty, Jr. **35**: 162—1963
Speaker assembly. John H. Breisch. **35**: 630—1963
Stereophonic sound transmission systems. William S. Percival. **35**: 630—1963

5.15 Sound-Level Meters. Level Recorders. Sound Pressure Measurement. (See also 5.4.)

ABSTRACTS
Estimating noise hazard with the sound-level meter. J. L. Flanagan and Newman Guttman. **35**: 1896—1963

PATENTS
Noise meter. Kenneth C. Stewart. **35**: 1675—1963

5.16 Sound Recording and Reproducing. General

LETTERS TO THE EDITOR
Frequency-dividing networks. Lawrence Fleming. **35**: 1454—1963

ABSTRACTS
RCA Victor "Dynagroove" system. Harry F. Olson. **35**: 1878—1963

PATENTS
Adjustable reverberation device with muting switch. Raymond A. Stolle. **35**: 438—1963
Compatible stereophonic system. Murray G. Crosby. **35**: 162—1963
Controllable stereophonic electroacoustic network. Emmanual Berlant. **35**: 162—1963
Device for the sound reproduction of cinematographic films. Jean Thevenaz. **35**: 437—1963
Dielectric recording and playback apparatus and method. Joseph I. Heller. **35**: 437—1963
Film transport system for sound recording and reproducing devices. Robert B. Johnson. **35**: 438—1963
Method of modifying a recorded sound track and apparatus for producing a modified sound track. Dennis Gunst. **35**: 437—1963
Personalized sound. Priscilla D. Gardner. **35**: 630—1963
Single channel stereophonic system. Harold B. Collins. **35**: 162—1963
Stereo sound system for TV. Thomas W. Reesor. **35**: 162—1963
Tape recorder. Willi Draheim. **35**: 1308—1963
Tape recording and translating and the like. Thomas A. Banning, Jr., and Emil L. Ranseen. **35**: 762—1963
Transducer head system. Marvin Camras. **35**: 162—1963

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5.16d Disk Recording (including cutting and embossing)

PATENTS

Apparatus for and methods of assembling record engaging styli. Charles G. Weigand. **35**: 2032—1963

Apparatus for balancing the outputs of a stereophonic phonograph pickup cartridge. Donald E. Johnson. **35**: 2031—1963

Ceramic electromechanical transducer. Carmen P. Germano and Melvin G. Kullin. **35**: 763—1963

Ceramic reproducer. William S. Bachman and Louis R. Porrata. **35**: 164—1963

Compensated tone arms. George Alexandrovich. **35**: 2031—1963

Device for the recording or reproduction of sound tracks. Einer Kristian Knudsen. **35**: 163—1963

Disc-record playing apparatus. James Alexander Lee. **35**: 630—1963

Dual stylus phonograph pickup. Anthony A. Sariti and David E. Laux. **35**: 2031—1963

Dual stylus phonograph pickup and holder. Norman H. Dieter, Jr., and Egon H. Bauer. **35**: 1495—1963

Electromechanical transducer. John F. Wood. **35**: 631—1963

Failure detecting and indicating means for sound recording systems. Frederick W. Roberts, Lloyd R. Jones, Alfred L. DiMattia, and Roger C. Curtis. **35**: 163—1963

Gramophone pickups. Jean Walton. **35**: 631—1963

Magazine phonographs. Hans Christian Hansen. **35**: 1676—1963

Magnetic phonograph pickup. Benjamin B. Bauer. **35**: 164—1963

Method and means for variable resistance recording. Panayotis C. Dimitracopoulos and Constantine D. Pezaris. **35**: 1308—1963

Methods of producing grooved records. Michael Treacher Terry. **35**: 763—1963

Novel mounting sheath for piezoelectric phonograph cartridge. Stanley Kelly, Alec Schumann, and John Nelson Adams. **35**: 1676—1963

Phonograph attachment for gauging starting position of the tone arm. William H. Wells. **35**: 163—1963

Phonograph cartridge and stylus. Roy Dally. **35**: 1676—1963

Phonograph pickup. Daniel P. Doncaster. **35**: 162—1963

Phonograph pickup. George A. Grover. **35**: 631—1963

Phonograph pickup. John F. Wood. **35**: 631—1963

Phonograph pickup cartridge. Rene C. Snepvangers. **35**: 632—1963

Phonograph pickup cartridge. John F. Wood. **35**: 631—1963

Phonograph pickup cartridge and replaceable stylus therefor. Peter Ernest Pritchard. **35**: 632—1963

Phonograph pickup device. Raymond C. Dreier. **35**: 630—1963

Phonograph record cutter. William S. Bachman. **35**: 163—1963

Phonograph turntable assembly. Frederick H. Drake. **35**: 163—1963

Pickup cartridge. Robert J. Hammond. **35**: 163—1963

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Stereophonic transducer means. Joseph W. Crownover. **35**: 763—1963

Stylus holder for phonograph pickup cartridges and the like. Henry J. Cvetko. **35**: 763—1963

Tone arm and cartridge assembly. George W. Sioles, Alfred L. DiMattia, and Benjamin B. Bauer. **35**: 1308—1963

Tone arm for phonographs. Klaus Kröber. **35**: 1308—1963

Transducers. George Victor Planer and Robert William Windebank. **35**: 762—1963

Turntables of record players. George Leonard Morgan. **35**: 630—1963

Universal mount for stylus assembly. Alfred L. DiMattia and Edward Kaulins. **35**: 2032—1963

Variable capacitance transducer with a radioactive battery. Joseph W. Crownover. **35**: 2032—1963

5.16f Film Recording (by photographic means)

PATENTS

Magnetic film marking. Lloyd T. Goldsmith. **35**: 1308—1963

5.16m Magnetic Recording

PATENTS

Amplifier system for magnetic recorder-reproducer. Carl W. Claras and Theodore Wickstrom. **35**: 1314—1963

Amplifying and oscillating circuit. William E. Moulic, Jr. **35**: 1319—1963

Angled transducer heads to minimize magnetic coupling. Henry Ray Warren. **35**: 2032—1963

Apparatus for positioning and scanning a transducer head over a grooveless record. Arthur J. Hyatt. **35**: 1309—1963

Apparatus for recording and reproducing magnetic information. Simon Levin. **35**: 763—1963

Apparatus for recording and reproducing sound continuously for a long time adapted to be attached on a magnetic sound record reading machine. Yasushi Hoshino. **35**: 164—1963

Arrangement of spools in a wire stock replacement unit for magnetic sound recording and reproducing apparatus. Ernst Genning. **35**: 1312—1963

Automatic control for tape recorders. Edwin S. Bara. **35**: 1317—1963

Automatic magazine type tape mechanism. Anthony Flan. **35**: 1868—1963

Automatic station-selected indicator for remote controlled television receivers. Harry Vorgan. **35**: 1313—1963

Backspacing apparatus for transcribing machines. Frederick W. Roberts, John R. Montgomery, and Douglas B. Tiffany. **35**: 441—1963

Binaural magnetic pickup heads. William D. Moehring. **35**: 632—1963

Boundary-displacement magnetic recording and reproducing system. Saburo Uemura. **35**: 765—1963

Boundary displacement magnetic recording apparatus. Howard L. Daniels. **35**: 1319—1963

Brake for reversible drive means in wire or tape sound recording and reproducing apparatus. Ernst Genning. **35**: 1869—1963
Carrying case for portable dictating machines. Clarence J. Gormel. **35**: 1495—1963
Cassettes for magnetic recorders and recorders for use with these. Laszlo Namenyi-Katz. **35**: 2032—1963
Coin controlled tape player. Fred H. Osborne, Christian L. Flateau, and Anthony C. Ippolito. **35**: 2035—1963
Combination of radio receivers and magnetic record reproducing devices. Simon Duinker and Jacob Koorneef. **35**: 440—1963
Complementary magnetic cores for selective magnetic record readout. R. Lee Hollingsworth. **35**: 1314—1963
Composite magnetic recorder device. Andre Razis. **35**: 1317—1963
Continuous tape recorder and sound reproducer. Eugene S. Horres. **35**: 764—1963
Crash data recorder. Fritz Albrecht. **35**: 1311—1963
Degaussing apparatus. Cyril B. Tronslin, John F. Sweeney, Jr., Dwight W. Brede, and James W. Dorsett, Jr. **35**: 1867—1963
Device for holding a master magnetic record sheet and a magnetic record sheet to be printed in a correct overlapping relationship in printing operation. Yasushi Hoshino, Mamoru Namikawa, and Shigezo Tochihara. **35**: 1313—1963
Device for preparing magnetic record matrix plates in magnetic recording machines of spiral track type. Sakae Fujimoto. **35**: 633—1963
Device for recording and/or reproducing high-frequency signals, more particularly television signals. Franciscus T. Backers. **35**: 1318—1963
Device for re-winding an endless tape. Gustav Fries. **35**: 1867—1963
Dictating machine. George F. Parris. **35**: 1317—1963
Dictating machine erasure unit. William M. Nye. **35**: 1316—1963
Dictating machines. Louis Z. La Forest. **35**: 439—1963
Drive mechanism for magnetic recording deck. Georg Fischer, Hans-Georg Lange, and Werner Dinse. **35**: 1310—1963
Echo effect recording. Derk Kleis. **35**: 1871—1963
Electromagnetic eraser. Chauncey D. Jackson, William L. Batchelor, and Donald B. Thompson. **35**: 1309—1963
Electromagnetic transducer. David J. Carpenter. **35**: 1316—1963
Electromagnetic transducer. Anton Marian Springer. **35**: 765—1963
Electromagnetic transducer head. Marvin Camras. **35**: 2035—1963
Electromagnetic transducer head. Cecil E. Williams. **35**: 2034—1963
Elimination of amplitude distortion noise. Joseph W. Gratian. **35**: 2034—1963
Equipment for use with magnetic tape records. Frank J. Reed. **35**: 1868—1963
Erasing means for magnetic recording. Frank Radocy. **35**: 1311—1963
Feedback for a flux gate reproducing system. David E. Wiegand. **35**: 632—1963
Flutter correcting circuit for magnetic playback system. Clifford E. Berry. **35**: 1310—1963
Flux-gate transducer. David E. Wiegand. **35**: 1313—1963
Glass gap spacer for magnetic heads. Simon Duinker and Jules Bos. **35**: 1867—1963
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Intelligence storing device for recording equipment. Thomas K. Aalund and Herbert Sullivan. **35**: 1495—1963
Magazine for a tape recorder. Radley Cross. **35**: 765—1963
Magnetic erase means. Carl T. Young and Stephen Bespalko. **35**: 2033—1963
Magnetic head and method of making same. Marvin Camras. **35**: 441—1963
Magnetic head cleaning tape. John Hicks, IV. **35**: 1311—1963
Magnetic heads. Henry Ray Warren. **35**: 165—1963
Magnetic head suspension. John F. Baker, Dusan S. Gelletich, and William J. Wasylenko. **35**: 442—1963
Magnetic pickup heads. Lawrence T. Fleming and Robert K. Willardson. **35**: 1317—1963
Magnetic playback heads. Dennis H. Howling. **35**: 439—1963
Magnetic record carrier. John Archer and John Lechmere Owner. **35**: 1870—1963
Magnetic record disc with gas-supported transducer. Jacob J. Hagopian. **35**: 2033—1963
Magnetic recorder. Charles Ulman. **35**: 441—1963
Magnetic recorder and reproducer. William S. Latham and William F. Saars. **35**: 1314—1963
Magnetic recorder head. Jack L. Metz. **35**: 1313—1963
Magnetic recorder with echo effect. John H. Andresen, Jr. **35**: 632—1963
Magnetic record head assembly. Donald F. Eldridge and Eric D. Daniel. **35**: 633—1963
Magnetic recording. Robert F. Sanford. **35**: 1318—1963
Magnetic recording and playback systems for magnetic tape and magnetic wire. Anton M. Springer. **35**: 439—1963
Magnetic recording and reproducing apparatus. John J. Hoehn and Fielding B. Hills. **35**: 1310—1963
Magnetic recording and reproducing apparatus. Michael J. Nowlan. **35**: 765, 2033—1963
Magnetic recording and reproducing apparatus. Avery G. Richardson. **35**: 1496—1963
Magnetic recording and reproducing apparatus. Karl Rupp. **35**: 2033—1963
Magnetic recording and reproducing equipment. Dallas R. Andrews and Elwood S. Maris, Sr. **35**: 1868—1963
Magnetic recording and reproducing machine. Sakae Fujimoto. **35**: 164—1963
Magnetic recording and reproducing system. Ikuro Moriya. **35**: 1496—1963
Magnetic recording apparatus. Albert P. Lang. **35**: 1869—1963
Magnetic recording apparatus with correction device. Eugen Beyer. **35**: 1497—1963
Magnetic recording devices. Dennis Gabor. **35**: 764—1963
Magnetic recording means. Peter C. Goldmark. **35**: 1870—1963
Magnetic recording of measuring processes. Petar Palic. **35**: 1871—1963
Magnetic recording or reproducing devices. Laszlo Namenyi-Katz. **35**: 1312—1963
Magnetic recording system. Robert J. Ehret. **35**: 764—1963
Magnetic recording system. Wesley Tannenbaum, Ellis Hudes, and Alfred Leonard Goldstein. **35**: 1868—1963
Magnetic recording techniques. Ralph Westerfeld and Kalju Meri. **35**: 1495—1963
Magnetic record reproducing apparatus. Roy C. Wilcox. **35**: 165—1963
Magnetic record sheet for a magnetic recording and reading apparatus. Yasushi Hoshino, Minoru Sato, Mamoru Namikawa, and Shigezo Tochihara. **35**: 1316—1963
Magnetic record transducer apparatus. Alfred E. Lorenz. **35**: 165—1963

Magnetic-sound-track motion picture apparatus. Eric M. Berndt and Walter H. Bach. 35: 2034—1963
Magnetic tape apparatus. Donald A. Horstkorta. 35: 1317—1963
Magnetic tape apparatus and cycling control therefor. Dwight W. Brede. 35: 1869—1963
Magnetic tape cartridge. Ulyss S. Mitchell. 35: 1867—1963
Magnetic tape cleaner. Walter S. Buslik and Victor R. Witt. 35: 1870—1963
Magnetic tape machine. William A. Ellmore. 35: 633—1963
Magnetic tape recorder. Laszlo Namenyi-Katz. 35: 1312—1963
Magnetic tape recorder and reproducer. Benjamin Parzen. 35: 1870—1963
Magnetic tape recorder heads. Edmond Adams and William M. Hubbard. 35: 1311—1963
Magnetic tape recorders. Laszlo Namenyi-Katz. 35: 1870—1963
Magnetic tape recording and reproducing machine. Merle B. McKaig. 35: 1310—1963
Magnetic tape reproducing system. Sidney O. Sampson. 35: 438—1963
Magnetic tape transducer. Charles J. Peters. 35: 1497—1963
Magnetic transducer. John B. Clark. 35: 441—1963
Magnetic transducer. Otto Kornei. 35: 633—1963
Magnetic transducer head. Marvin E. Anderson. 35: 1314—1963
Magnetic transducer head. Marvin Camras. 35: 1310—1963
Magnetic transducer mounting. John J. Lynott. 35: 164—1963
Magnetic transducer with shoe-equipped floating head. William R. Maclay and Harry Charnetsky, Jr. 35: 1319—1963
Magnetic transducing apparatus. Bernard E. Beckner, Jack H. Irving, and Donald L. Drukey. 35: 633—1963
Magnetic transducing heads. Henry Milburn Harrison. 35: 442—1963
Magnetic transducing system. Wayne R. Johnson. 35: 1315—1963
Magnetic wire recording. James R. Bailey. 35: 764—1963
Magnetostructure recording device. George N. Johnson and Charles L. Vice. 35: 1315—1963
Mechanism for enabling a magnetic recorder to be used with a magnetic record sheet shorter than standard size. Yasushi Hoshino and Minoru Sato. 35: 1316—1963
Method and apparatus for editing magnetic recordings. Leslie A. Trumble. 35: 164—1963
Method and apparatus for obtaining constant speed drive for low-speed recorders. Burton D. Lee and Alvin L. Parrack. 35: 1311—1963
Method and means for reproducing signals from a very slow moving tape. William H. Lyon. 35: 1319—1963
Method of constructing magnetic recording devices. Richard B. Lawrance. 35: 1318—1963
Method of fabricating a laminated magnetic recording sleeve. William H. Lockwood and Henry Peters. 35: 439—1963
Method of making a magnetic transducer. Frank T. Kristiansen and Harold W. Pexton. 35: 1317—1963
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Noise suppression system. Daniel Cronin. 35: 441—1963
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Phonograph, particularly sound tape apparatus. Karl Cech. 35: 2034—1963
Pocket tape recorders. Joseph I. Heller. 35: 2035—1963
Portable disk-type magnetic recording apparatus. Loren F. Jones. 35: 1309—1963
Position control system. John D. Bick and Jerome L. Grever. 35: 2034—1963
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Pronunciary. Joseph W. Gratian and Richard J. O'Brien. 35: 1497—1963
Recording and playback head for magnetic sound recorders. Richard Siegemund. 35: 765—1963
Recording and reproducing apparatus. Dallas R. Andrews. 35: 1868—1963
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Recording and reproducing head for magnetic tape. Allan R. Keskinen. 35: 165—1963
Recording and reproducing high frequencies transversely on a magnetic tape. Alexander R. Maxey. 35: 1312—1963
Recording and reproducing system. Eric M. Leyton. 35: 439—1963
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Recording with audible and visible monitoring. Ralph H. Kruse, Howard N. Fawcett, and James D. Digby. 35: 764—1963
Reel for magnetophone bands. Giovanni Geloso. 35: 1309—1963
Resonant circuitry for a transducer head. Michael J. Nowlan. 35: 1496—1963
Rotary head drive control mechanism and circuitry for recording magnetic tape recording and/or reproducing apparatus. Louis J. Kabell, Howard E. Murphy, and Walter B. Guggi. 35: 1315—1963
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Saturable magnetic head. Frederic F. Grant. 35: 1315—1963
Semiconductor magnetic pickup. Joseph W. Gratian. 35: 2034—1963
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Sound delay reverberation effect. Raymond A. Stolle and Eddie S. Tubin. **35**: 442—1963
Sound or pulse recording reproducing apparatus. Carl-Erik Granqvist. **35**: 1318—1963
Sound recording and reproducing apparatus utilizing perforated magnetic tape. Chester Earnest Beachell. **35**: 1312—1963
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Sound scanning device for perforated sound carriers having magnetic sound tracks. Siegfried Schutze and Horst Stuhmke. **35**: 1314—1963
Sound tape apparatus. Hans-Werner Pieplow, Helmut Haas, and Helmut Harnisch. **35**: 1870—1963
Storing tape in a tubular tape recorder. Harold E. McGowen, Jr. **35**: 1496—1963
Storing television signals. Helmut Neumann and Peter Drost. **35**: 2033—1963
Superimposed recording. Jonathan Hunter. **35**: 1311—1963
System for duplicating magnetic tape records. Athans Bouzemburg. **35**: 2033—1963
System for manufacturing at high speed magnetic sound record sheets used on a magnetic sound record reading machine. Yasushi Hoshino, Mamoru Namikawa, and Shigezo Tochihara. **35**: 1313—1963
Tape recorder. Raymond C. Bierman. **35**: 440—1963
Tape recorder. Frederick D. Waldhauer. **35**: 1309—1963
Tape recorder capstan drive. Gordon R. Schulz. **35**: 439—1963
Tape recorder control device. Devon L. Smith. **35**: 764—1963
Tape recorder drive. Henrich Wehde, Hans-Georg Lange, Georg Fischer, and Manfred Spreng. **35**: 441—1963
Tape recorders. Frederick S. Stovold, Wilfred P. Leadley, and Robert C. Wilson. **35**: 2034—1963
Tape recorder transport. Stanley Berger and Leonard Rosenblatt. **35**: 2032—1963
Tape recording-playback head. Benjamin B. Bauer and Harvey Sherman. **35**: 1496—1963
Tape recording system and method. Maurice B. Haslam and Oliver C. Miles. **35**: 440—1963
Tape transducing apparatus. Robert F. Pfost. **35**: 1496—1963
Transducer for magnetically recorded signals. Wayne R. Johnson. **35**: 1319—1963
Transducer mounting. Wesley R. Johnson and Dale O. Larson. **35**: 1316—1963
Transducer positioning by air loading. Donald D. Sliter. **35**: 1309—1963
Transducer system for magnetic signals. Friedrich Kuhrt. **35**: 440—1963
Transducer with low microphonics. Richard G. Neville. **35**: 165—1963
Transducing system using controlled delay lines. Wayne R. Johnson. **35**: 440—1963
Transistorized reproducing amplifier circuitry having feedback. Helmut Reher and Hans-Günther Frerichs. **35**: 1316—1963
Transport means for a magnetic recorder-reproducer. James P. Fay. **35**: 1309—1963
Transversal recording machine. William G. Whitney and Bosco Wu. **35**: 2035—1963
Transverse boundary-displacement recording head. Joseph W. Gratian. **35**: 2035—1963
Transversely recorded tape. Leonard D. Barry. **35**: 1496—1963
Transversely scanning transducer with fixed electromagnet and moving pole pieces. John M. P. Merry. **35**: 2035—1963
Transversely scanning transducer with fixed electromagnet and moving pole pieces. Willem Klaas Westmijze. **35**: 2035—1963
Variable-area transducers. Howard L. Daniels. **35**: 1312—1963
Web reeling system. Joseph M. Uritis. **35**: 1869—1963
Wide frequency band recording and reproducing system. Paul-Gerhard Rothe. **35**: 2033—1963
Winding and reeling mechanism. Adolf L. Herrmann. **35**: 1869—1963

5.17 Telephones, Telephone Earphones, Intercommunication Systems. (See also 5.13.)

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Conference telephone apparatus. Wade M. Miller. **35**: 166—1963
Electrostatic earphone. Walter T. Selsted and George A. Brettell. **35**: 1498—1963
Head mounting for contact microphones. Louis Ernest Bonnin. **35**: 2036—1963
Loudspeaking telephone systems. Arthur Ian Forbes Simpson and William Alexander Cawthra. **35**: 442—1963
Telephone signal device and the like. Michael J. Civitano. **35**: 2036—1963

5.18 Transducing Principles, Structures, and Materials, General. (See also 5.8, 5.9, 5.17, 10.3, 12.3p, 13.7, and 13.11t.)

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Electroacoustic piezoelectric-paste transducer. Daniel E. Andrews, Jr. **35**: 949—1963
Electromagnetic recording apparatus. Borivoj Dubsky, Lldrich Straka, and Josef Bican. **35**: 1319—1963
Electromechanical transducer. Charles A. Rosen. **35**: 1098—1963
Electromechanical transducers. Robert Hill Robins. **35**: 766—1963
Electronically-controlled timepiece. Max Hetzel. **35**: 1676—1963
Optical pressure transducer. Daniel Post. **35**: 2037—1963
Piezoelectric crystal holder. John B. Lord. **35**: 765—1963
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Ultrasonic light modulator cell assembly. Adolph H. Rosenthal and Sophie Tinto. **35**: 2036—1963
Ultrasonic transducer arrangement for sending and receiving. Paul Renaut. **35**: 1098—1963
Vibration sensitive diode. Renato Bianchi and Herbert E. Ruehlemann. **35**: 260—1963

5.18m Magnetic Transducers: Magnetostriction

LETTERS TO THE EDITOR

Temperature dependence of dynamic magnetostrictive properties in nickel–cobalt–chromium alloys. C. A. Clark and J. J. Mason. **35**: 1665—1963

ABSTRACTS

Effects of hydrostatic pressure on magnetostrictors. Henry B. Karplus. **35**: 800—1963

5.18p Piezoelectric Transducer, Ferroelectrics

PAPERS

Logarithmic-periodic underwater sound projector. Klaus Walther. **35**: 81—1963
Nonacoustical method for measuring sensitivity of a piezoelectric hydrophone. Fred W. Raymond. **35**: 70—1963
Shift in the location of resonant frequencies caused by large electromechanical coupling in thickness-mode resonators. M. Onoe, H. F. Tiersten, and A. H. Meitzler. **35**: 36—1963
Thickness vibrations of piezoelectric plates. H. F. Tiersten. **35**: 53—1963

LETTERS TO THE EDITOR

Fundamental operation of quartz transducers in the VHF range, using silicate bonds. F. G. Eggers. **35**: 1832—1963
New standard for measurements of certain piezoelectric ceramics. Gordon E. Martin. **35**: 925—1963

ABSTRACTS

Behavior of piezoceramic projector materials under hydrostatic pressure. R. Y. Nishi and R. F. Brown. **35**: 1902—1963
Use of compliance loading as a transducer-design technique. Alan H. Lubell. **35**: 1903—1963

SUBTITLES

Piezoelectric transducer. Morio Onoe. **35**: 1004, 1007—1963

5.19 Tuning Forks

PATENTS

Frequency-adjustable tuning fork type vibrator for an electrically energized timepiece. Max Hetzel. **35**: 950—1963
Tuning fork. Thomas B. Gibbs. **35**: 166—1963
Tuning fork. Albert C. Jones, Frederick J. Lingel, and Peter B. Troup. **35**: 1498—1963
Tuning fork oscillator having separate magnetostrictive and magnetomotive controls. John R. Shonnard. **35**: 166—1963
Tuning fork type oscillators. Harry Reifel. **35**: 1498—1963
Tuning fork type relays. Harry Reifel and Gerald Karon. **35**: 1498—1963

5.21 Vibration Devices. Devices for Generating or Damping Vibrations. (See also 12., 12.3, 12.3i, 12.3p, and 12.3v.)

PAPERS

Design of sonic amplitude transformers for high magnification. Edward Eisner. **35**: 1367—1963
Measurements on a vibrating conductor in a magnetic field. Joseph G. Kelley. **35**: 1552—1963
Shift in the location of resonant frequencies caused by large electromechanical coupling in thickness-mode resonators. M. Onoe, H. F. Tiersten, and A. H. Meitzler. **35**: 36—1963

LETTERS TO THE EDITOR

Design of vibrating disks for mechanical radiation. Philip H. Williams. **35**: 114—1963

6. Musical Instruments and Music

6.1 General, Unclassified

PAPERS

Compensatory and pursuit tracking of pitch. J. Donald Harris, Andrew G. Pikler, and Jerome E. Murphy. **35**: 581—1963

LETTERS TO THE EDITOR

Acoustics of the New York Philharmonic Hall. R. S. Shankland. **35**: 725—1963
Reply to Shankland's Letter. Leo L. Beranek. **35**: 726—1963

ABSTRACTS

Acoustical characteristics of music. Arthur H. Benade. **35**: 1910(T)—1963
Acoustical environment for music. Leo L. Beranek. **35**: 1911(T)—1963
Characteristics of the tone quality of wind instruments. Jody C. Hall and Clyde E. Lockwood, Jr. **35**: 1902—1963
Computer program for automatic composition and generation of music. M. V. Mathews and Joan E. Miller. **35**: 1908—1963
Mathematical model for the perception of redundancy and stability in musical scales. David Rothenberg. **35**: 772—1963
Patterns of ratio relationships in melody. Paul C. Boomsliter and Warren Creel. **35**: 772—1963
Puzzling origin of Javanese tuning systems. J. Murray Barbour. **35**: 1908—1963
Referential theory of melody. Paul C. Boomsliter. **35**: 1911(T)—1963
System for measuring the acoustical response of wind instruments. Jody C. Hall. **35**: 1902—1963
System for measuring the effective length of wind instruments or portions of instruments. Earle L. Kent. **35**: 1902—1963
Temperament habits and preferences of professional musicians. Donald W. Stauffer. **35**: 772—1963
The ear and music. Earle L. Kent. **35**: 1911(T)—1963

PATENTS

Educational toy device for teaching alphabets or the like by sound. Adolph Orlick and John Orlick. **35**: 2037—1963

Musical instrument system. Clifford W. Andersen. 35: 260—1963
Musical jumping rope. Molly Decker. 35: 442—1963
Music timing devices. Edward J. Kozak. 35: 442—1963
Tone-color projector. Roger G. Smith. 35: 766—1963
Wind actuated toy musical instrument. Werner Hellman. 35: 1099—1963

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NEWS
Annual Report of the Technical Committee on Musical Acoustics. 35: 1463—1963

6.2 Bells, Xylophones. Other Instruments Having Rigid Vibrators

PATENTS
Bell chime operating mechanism. Hal D. Landon. 35: 1498—1963
Bell lights. Claybron Vaughn, Jr., and John F. Walter. 35: 1099—1963
Educational device. Anthony J. Amato. 35: 1499—1963
Method of tuning a musical tone generator bar. Jacob T. Kunz. 35: 1099—1963
Musical instrument. Gerard Thifault. 35: 1099—1963
Musical toys. Lazar Okrain. 35: 1099—1963
Put-together toy piano. Charles Pearson, Jr. 35: 634—1963

6.3 Brass Wind Instruments (lip vibrated)

ABSTRACTS
Acoustics of wind instruments. Jody C. Hall. 35: 1914(T)—1963
Analysis of the resonance patterns obtained with mouthpieces of varying dimensions. Jody C. Hall. 35: 1902—1963
Characteristics of the tone quality of wind instruments. Jody C. Hall and Clyde E. Lockwood, Jr. 35: 1902—1963
Comparison of a mathematically derived effective length of a cornet bell with experimental data. Earle L. Kent. 35: 1902—1963
System for measuring the acoustical response of wind instruments. Jody C. Hall. 35: 1902—1963
System for measuring the effective length of wind instruments or portions of instruments. Earle L. Kent. 35: 1902—1963
Transients in wood winds and brasses. Herbert M. Neustadt. 35: 771—1963

PATENTS
Apparatus for cleaning musical instruments of the cup mouthpiece type. Alf F. Harbo. 35: 260—1963
Piston guide key arrangement for brass instrument. Leland B. Greenleaf. 35: 1676—1963

6.4 Drums and Other Membranophonic Instruments

PATENTS
Drumhead construction. William Frederich Ludwig. 35: 166—1963
Musical instrument. Francois Baschet. 35: 1499—1963
Tympanic type musical instrument. William B. Loughborough. 35: 442—1963

6.5 Pipe Organs

PAPERS
Quality of organ tones. Harvey Fletcher, E. Donnell Blackham, and Douglas A. Christensen. 35: 314—1963

LETTERS TO THE EDITOR
Variable acoustics for organ recital halls. Robert H. Tanner. 35: 404—1963

ABSTRACTS
Acoustics of organs and pianos. Daniel W. Martin. 35: 1914(T)—1963

PATENTS
Organ reed pipe. Ralph E. Bolton. 35: 1099—1963
Tremolo for organ. Albert W. Imhoff. 35: 1100—1963

6.6 Pianos and Other Keyboard Stringed Instruments

ABSTRACTS
Acoustics of harpsichords and clavichords. John Challis. 35: 1914(T)—1963
Influence of irregular patterns in the inharmonicity of piano-tone partials upon tuning practice. Earle L. Kent. 35: 1909—1963

PATENTS
Combined piano and accordion instrument. Camillo Tannini. 35: 1677—1963
Drop action. Orville T. Wood and Julius E. Underwood, Jr. 35: 1100—1963
Keyboard construction. Gene Aubrey Stiles. 35: 1100—1963
Keyboards and accessories. Harold A. Jewett. 35: 1100—1963
Key mounting for musical instruments. Karl Scherer. 35: 1100—1963
Musical string tuning device. Warren Herman Farr. 35: 443—1963
Piano action. Walter J. Quednau. 35: 1676—1963
Piano back structure. Louis J. Merkel. 35: 261—1963
Piano case. Albert Anthony Diebold. 35: 1100—1963
Tuned-vibrator musical instrument. Benjamin F. Miessner. 35: 1100—1963

6.7 Violin Family. Stringed Instruments Except Keyboard Type

PAPERS
The violin as a circuit. John C. Schelleng. 35: 326—1963

LETTERS TO THE EDITOR
Vibration modes of coupled plates. Robert H. Scanlan. 35: 1291—1963

ABSTRACTS
Acoustic parameters of violin design applied to the development of a graduated series of violin-type instruments. Carleen M. Hutchins. 35: 771—1963
Acoustics of the violin family. Carleen M. Hutchins. 35: 1914(T)—1963
Significant characteristics of good violins and other wooden musical instruments. Eugen J. Skudrzyk. 35: 771—1963
Violin resonances. C. L. Caldwell. 35: 771—1963

PATENTS
Body shell and sounding box structure for harps. Samuel O. Pratt. 35: 443—1963
Guitar construction. Glen F. Burke. 35: 950—1963
Magnetic pick-up for steel string instruments. Joseph J. Kelley, Jr. 35: 766—1963
Metallic stringed musical instruments. Seth E. Lover and Theodore M. McCarty. 35: 950—1963
Musical instrument. Kinya Yamamoto. 35: 2037—1963
Musical instrument string divider. Eugene O. Retter. 35: 1320—1963
Tremolo device for stringed instruments. Paul D. Butts. 35: 634—1963
Violin resonance chamber with tapered wall thickness. Bertrand B. Westlake. 35: 1499—1963
Violin with chin rest. Yehudi Menuhin and Erno Meir Goldberger. 35: 2037—1963
Visual tuning device for stringed instruments. Clair Omar Musser. 35: 634—1963

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The violin as a circuit. John C. Schelleng. 35: 1291—1963

6.8 Wood Winds

PAPERS
Small-vibration theory of the clarinet. John Backus. 35: 305—1963
Sounds of the highland bagpipe. Cyril M. Harris, Maurice Eisenstadt, and Mark R. Weiss. 35: 1321—1963

ABSTRACTS
Acoustics of wind instruments. Jody C. Hall. 35: 1914(T) —1963
Characteristics of the tone quality of wind instruments. Jody C. Hall and Clyde E. Lockwood, Jr. 35: 1902—1963
Frequency shift for loud tones of the clarinet. John Backus. 35: 771—1963
Harmonic structure of the tone of the bassoon. Paul R. Lehman. 35: 1901—1963
Physical basis of woodwind-recorder voicing. Samuel A. Elder. 35: 1901—1963
Sounds of the bagpipe. Cyril M. Harris, Maurice Eisenstadt, and Mark R. Weiss. 35: 771—1963
System for measuring the acoustical response of wind instruments. Jody C. Hall. 35: 1902—1963
System for measuring the effective length of wind instruments or portions of instruments. Earle L. Kent. 35: 1902—1963
Thermal perturbations in woodwind bores. A. H. Benade. 35: 1901—1963
Transients in wood winds and brasses. Herbert M. Neustadt. 35: 771—1963
Vibration of the clarinet body and its contribution to the clarinet tone. John Backus. 35: 1901—1963

PATENTS
Attachment for mouthpiece of reed instrument. Vernon B. Houser. 35: 1101—1963
Brace for musical instrument. Leon Leblanc. 35: 1101—1963
Clarinet. Rosario Mazzeo. 35: 2037—1963
Clarinets. Thomas F. McIntyre and Robert J. McIntyre. 35: 1101—1963
Clarinets. Jack W. Robbins. 35: 1101—1963
Detachable union and tuning joint for musical instruments. Bernard L. Van Caster. 35: 1101—1963
Modified thumb rest for clarinets or the like. William Thomas Hearne, Jr. 35: 1100—1963
Musical intrument. Ho June Kim. 35: 1101—1963
Secondary register hole for clarinets. Oscar E. Christensen. 35: 1101—1963
Sound head for musical wind instrument. Karl Scherer. 35: 2037—1963

6.9 Electrical Musical Instruments

PATENTS
Acoustic amplifier and musical instrument incorporating same. Francois Pierre Maurice Baschet. 35: 1102—1963
Apparatus for minimizing beat effects. Donald J. Leslie. 35: 1678—1963
Apparatus for producing pseudo-stereophonic effects. John M. Hanert. 35: 1678—1963
Artificial reverberation control apparatus. Herbert E. Meinema. 35: 1677—1963
Attachment for automatically playing root tones of chords in bass section of organ. Jean A. Greif. 35: 261—1963
Circuit for use in musical instruments. James Paul White. 35: 1102—1963
Control elements for electronic musical instruments. Günter Pötzl. 35: 1102—1963
Electrical circuit arrangement for complex wave generators. Donald J. Leslie. 35: 262—1963
Electrical musical instrument. Richard H. Dorf. 35: 262 —1963
Electrical musical instrument. Amedeo Iorio. 35: 1499—1963
Electrical musical instrument having mechanically vibratable tone generators. Jacob T. Kunz. 35: 1678—1963
Electrical musical instruments. Sune Hearley Bergman. 35: 1677—1963
Electrical musical system. Charles J. Tennes. 35: 262—1963
Electric musical instrument. William C. Wayne, Jr. 35: 261—1963
Electroacoustic tone-modifying system for stringed musical instruments. Chauncey Richard Evans. 35: 1320—1963
Electronic musical instrument. Merlin Davis. 35: 1103—1963
Electronic organ. Richard H. Peterson. 35: 1677—1963
Electronic organ with transient speech effects. Jerome Markowitz. 35: 1677—1963
Electronic piano. Benjamin F. Miessner. 35: 262, 1677—1963
Electronic piano. Edward G. Thurston and Clifford W. Andersen. 35: 261—1963
Electronic tone signal generators. Baskin R. Lawrence. 35: 1101—1963
Electro-piano. Hugo Benioff. 35: 1678—1963
Instrument keying circuit. William H. Krug. 35: 1678—1963
Keyboard for chord organ. Thomas S. Lo Duca. 35: 261 —1963
Obtaining ensemble and celeste effects in electrical musical instruments. Albert Meyer. 35: 1679—1963
Pedal structure for electronic piano. Clifford W. Andersen. 35: 1102—1963
Percussion system. Richard E. Williams. 35: 1102—1963
Percussive type electric musical instrument. Serge L. Krauss and Charles J. Tennes. 35: 261—1963
Phase-shift oscillator for electronic organs. Richard H. Campbell, Jr. 35: 1103—1963
Portable electronic musical instruments. Thomas C. Edwards. 35: 1871—1963
Rotary electrostatic speaker. Donald J. Leslie. 35: 634—1963
Single keyboard electronic carillon. Justin A. Kramer. 35: 1677—1963
Single manual double countermelody electrical musical instrument. John M. Hanert. 35: 1679—1963
Sound distribution system. Daniel W. Martin. 35: 261—1963
Tone generator. Benjamin F. Miessner. 35: 1103—1963
Tone generator circuits. Robert C. Burgener and Alexander Finlay. 35: 262—1963
Tuning means for an electrical musical instrument. Edwin H. Hilborn. 35: 1101—1963

6.10 Reed Organs. Accordions, Harmonicas

PATENTS
Accordion attachment for treble grill. Frank D. Orsolini. 35: 262—1963
Accordions. Anthony De John. 35: 2037—1963
Bass section for accordion or the like. Mario Moschino. 35: 634—1963
Magnetic pickup for the bass section of accordion. Reynold H. Lewis. 35: 1499—1963
Organ with motor-driven blower. Ginzo Kikugawa. 35: 1103—1963
Reed organ. Finn H. Magnus. 35: 766—1963
Sound producing devices. Sidney Craft. 35: 1103—1963

6.11 Singing—Vibrato. (Changed from 9.9 beginning 1961.)

ABSTRACTS

Acoustics of the singing voice. Paul B. Oncley. **35**: 1914(T)—1963

7. *Noise*

7.1 General, Unclassified

PAPERS

Noise reduction of rectangular enclosures with one flexible wall. Richard H. Lyon. **35**: 1791—1963

Onset discrimination for white noise. Irwin Pollack. **35**: 607—1963

Relation of hearing loss to noise spectrum. R. Plomp, D. W. Gravendeel, and A. M. Mimpen. **35**: 1234—1963

Some effects of spectral content and duration on perceived noise level. Karl D. Kryter and Karl S. Pearsons. **35**: 866—1963

ABSTRACTS

Crest and extremal statistics of a "cube-law" element driven by random noise. Talivaldis I. Smits. **35**: 1876—1963

Measurement of average mechanical-power input to a structure excited by frequency bands of noise. Denis U. Noiseux and Charles W. Dietrich. **35**: 802—1963

Need for more environmental acoustical testing. Jerry B. Overton. **35**: 791—1963

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Reception of noise. Melvin J. Jacobson. **35**: 300—1963

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7.2 Annoyance

ABSTRACTS

Annoyance judgments of sonic booms. Karl S. Pearsons. **35**: 1913—1963

Damage-risk criterion for steady-state noise. Karl D. Kryter. **35**: 777—1963

Decibel vs hearing cell. Z. Angeluscheff. **35**: 810—1963

7.3 Audiograms of Noise

PAPERS

Temporal summation for tones in narrow-band noise. E. Zwicker and H. N. Wright. **35**: 691—1963

7.4 City Noise

ABSTRACTS

Background-noise levels in suburban communities. Lewis S. Goodfriend, R. L. Cardinell, Paul B. Ostergaard, and Ray Donley. **35**: 779—1963

7.5 Frequency Analyses of Noise

LETTERS TO THE EDITOR

On the bandwidth error of Butterworth bandpass filters. L. W. Sepmeyer. **35**: 404—1963

ABSTRACTS

Estimating noise hazard with the sound-level meter. J. L. Flanagan and Newman Guttman. **35**: 1896—1963

SUBTITLES

Frequency analysis of noise. R. G. Klumpp and J. C. Webster. **35**: 1329—1963

7.6 Noise in Buildings. (See also *2.2.*)

LETTERS TO THE EDITOR

Comments on impact-noise measurement. T. Mariner. **35**: 1453—1963

7.7 Machinery Noise. Mufflers. Noise Silencers

PAPERS

Experimental study of noise reduction in centrifugal blowers. T. F. W. Embleton. **35**: 700—1963

Multichannel threshold audio-noise-reduction circuit. Edward S. Rogers. **35**: 91—1963

ABSTRACTS

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Attenuation of rocket-engine noise by water injection into the flame bucket. Arnold L. Shulman. **35**: 780—1963

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Frequency conversion and whirl modes. Duane J. Bonvallet. **35**: 1891—1963

Measurement and evaluation of vehicle noise. G. L. Fuchs. **35**: 1891—1963

Measurements of noise generated by centrifugal blowers. G. C. Maling, Jr. **35**: 1913—1963

Noise characteristics of a textile loom. Allen L. Cudworth—**35**: 779—1963

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Technique for measurement of axle-gear dynamic tooth stiffness. Philip E. Nimmo. **35**: 1891—1963

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PATENTS

Acoustic buzz suppressor. Edward P. French and Stanley J. Minton. **35**: 2043—1963

Acoustic duct and panel construction therefor. Roland B. Bourne and John P. Tyskewicz. **35**: 950—1963

Air cleaner and silencer. Hugh Edwin Pritchard. **35**: 2039—1963

Anti-noise and anti-splash attachment for a toilet bowl. Marlin R. Stebbins. **35**: 1103—1963

Automotive muffler. Walter H. Powers. **35**: 2039—1963

Cast muffler. Edward M. Jobson. **35**: 2045—1963

Combination muffler and afterburner. John Allen Buttler. **35**: 2038—1963

Composite coated muffler and method of making the same. Eugene E. Howe. **35**: 1873—1963

Control signal generator. Stewart W. Daniel. **35**: 443—1963

Discharge nozzle for jet silencing. Louis Duthion and Jean H. Bertin. **35**: 2042—1963

Engine muffler. Benjamin F. Court. **35**: 2040—1963

Engine vacuum sound barrier. John D. Yanda. **35**: 1872—1963

Exhaust filter-muffler. Albert L. Kleinecke. **35**: 2038—1963

Exhaust gas purifier and muffler. James H. McLoughlin. **35**: 2042—1963

Exhaust heater-muffler combination. Stephen J. Hannon. **35**: 2042—1963

Exhaust muffler. Leonard M. Morrish and Lloyd E. Mueller. **35**: 2038—1963
Exhaust muffler. James D. Reese. **35**: 2039—1963
Exhaust muffler and oxidizer. Stephen G. Gerlach. **35**: 2038—1963
Gas blending and sound-attenuating system and apparatus. Floyd E. Deremer. **35**: 1872—1963
Internal combustion engine exhaust silencers. Peter Spiegel. **35**: 2042—1963
Jet engine noise suppression nozzle with multiple settings. John A. Lawler and William A. Reinhart. **35**: 2043—1963
Jet engine sound suppressor and reverser. Schuyler Kleinhans and Carl A. Weise. **35**: 1872—1963
Jet noise suppressor nozzle. Adrian Albert Lombard and Wilfred Henry Wilkinson. **35**: 2044—1963
Jet wake noise intensity pattern control means. John M. Tyler and Thomas G. Sofrin. **35**: 2041—1963
Marine type muffler. Thomas N. Kelly. **35**: 2045—1963
Method of making mufflers. Walter H. Powers and Benton D. Jacokes. **35**: 2044—1963
Method of reducing noise in oil burners. William A. Beach and Joseph D. Soltis. **35**: 1872—1963
Methods and apparatus for suppressing jet noise. Stephen P. Maytner. **35**: 2040—1963
Muffler. John E. Gerli. **35**: 2043—1963
Muffler. John I. House and Leland G. Ward. **35**: 2045—1963
Muffler. Walter H. Powers. **35**: 2042—1963
Muffler. Joseph Reindl. **35**: 2045—1963
Muffler construction. Lars O. Hedblom. **35**: 2042—1963
Muffler construction. Walter H. Powers. **35**: 2041—1963
Muffler construction. James D. Reese. **35**: 2039—1963
Muffler for air cylinders and the like. Anthony M. Gildone. **35**: 2040—1963
Muffler for internal combustion engines. Fritz Abbuhl. **35**: 2041—1963
Muffler or silencer. Josef Speck. **35**: 1872—1963
Muffler structure. George Albert Lyon. **35**: 2040—1963
Muffler structure with baffle means. George Albert Lyon. **35**: 2040—1963
Muffler with spiral partition. William Carl Diehl. **35**: 2044—1963
Noise attenuating apparatus. Guy J. Sanders, Charles N. Rink, and Arthur Oppenheim. **35**: 1104—1963
Noise suppression nozzle. John T. Kutney. **35**: 2043—1963
Noise suppressor. Charles Potter. **35**: 2045—1963
Noise suppressor and thrust reverser for jet engine nozzles. John A. Lawler. **35**: 2040—1963
Noise suppressor for pressure reducing valves. Henry W. Angelery. **35**: 2042—1963
Prefabricated insulated duct and sound trap. John J. March. **35**: 950—1963
Retractable jet engine noise suppressor. Charles William Heppenstall. **35**: 1871—1963
Retractable noise suppressor for jet engines. Charles A. Grotz, William A. Reinhart, and Kenneth V. Swanke. **35**: 2043—1963
Silencer. John H. T. Wade. **35**: 2037—1963
Silencer and heat recovery system. James Mair. **35**: 2039—1963
Silencers. Basil Davenport Blackwell, George Clifford Chick, and Raymond Peter Cane. **35**: 2038—1963
Silencers for the exhaust gases of vehicle internal combustion engines. Giuseppe Calabresi. **35**: 2041—1963
Slotted jet engine noise suppressor. John M. Tyler and George B. Towle. **35**: 2040—1963
Sound-attenuating system and apparatus for gas streams. Floyd E. Deremer. **35**: 1871—1963
Spiral muffler. Marcus E. Pigman. **35**: 2044—1963
System and apparatus for sound-attenuation of gas streams. Floyd E. Deremer. **35**: 1872—1963

7.8 Noise Generators, Sirens

PAPERS
Acoustic siren for generating wide-band noise. J. N. Cole, R. G. Powell, H. L. Oestreicher, and H. E. von Gierke. **35**: 173—1963
Experiments concerning the vortex whistle. Robert C. Chanaud. **35**: 953—1963
Noise generation by open turbulent flames. T. J. B. Smith and J. K. Kilham. **35**: 715—1963

LETTERS TO THE EDITOR
Effect of cutoff configuration on pure tones generated by small centrifugal blowers. L. A. Lyons and S. Platter. **35**: 1455—1963
Siren experiments with noncircular holes and with a noncircular nozzle. Max F. Meyer. **35**: 1663—1963

ABSTRACTS
Noise generation by fluid flow in ducts. Uno Ingard. **35**: 780—1963
Normalized acoustic output of an air impeller. Allen C. Potter. **35**: 780—1963

SUBTITLES
Noise generator. Richard A. Campbell. **35**: 845—1963

PATENTS
Engine noise simulator. Glenn H. Franck. **35**: 766—1963
Fluid powered horn assembly. Roy D. Buell, Jr., and Ben B. Peterson. **35**: 2045—1963
Method and means for focusing sound caused by aircraft. Laurence E. Fogarty. **35**: 443—1963
Noiseless tread portion for tire casing. Charles O. Moore and John O. Van Tassel. **35**: 2045—1963

7.9 Noise of Animals, Biological Noise. (See also 13.9.)

PAPERS
Responses to acoustic stimuli from single units in the eighth nerve of the bullfrog. Lawrence S. Frishkopf and Moise H. Goldstein, Jr. **35**: 1219—1963
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LETTERS TO THE EDITOR
Ambient noise in a coastal lagoon. Daniel W. Painter, II. **35**: 1458—1963

ABSTRACTS
Acoustical isolation from animal sounds. P. W. Hirtle and W. R. Farrell. **35**: 813—1963

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Conference on marine bioacoustics. **35**: 1300—1963
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7.10 Aerodynamic Noise, Jet Noise

PAPERS
Dimensional analysis of blower noise. George C. Maling, Jr. **35**: 1556—1963
Experimental study of noise reduction in centrifugal blowers. T. F. W. Embleton. **35**: 700—1963
Experiments concerning the vortex whistle. Robert C. Chanaud. **35**: 953—1963
Noise generation by open turbulent flames. T. J. B. Smith and J. K. Kilham. **35**: 715—1963

On sound radiation in terms of pressure independent of the sound speed. Alan Powell. **35**: 1133—1963
Resolution of pressure in turbulence. G. M. Corcos. **35**: 192—1963

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Further discussion of noise produced by boundary-layer turbulence. William C. Meecham. **35**: 931—1963
Helium tracing as a tool for aerodynamic studies. T. F. W. Embleton. **35**: 728—1963
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More on noise produced by boundary-layer turbulence. Alan Powell. **35**: 731—1963
Noise measurement of a turbulent gasoline vapor flame. Alan Powell. **35**: 405—1963
On (aerodynamic) noise arising from the use of pressure quadrupoles. Alan Powell. **35**: 1054—1963
On noise produced by boundary-layer turbulence. William C. Meecham. **35**: 116—1963
On spectra and directivity of jet noise. Herbert S. Ribner. **35**: 614—1963
On the noise produced by boundary-layer turbulence. John E. Ffowcs Williams. **35**: 930—1963
On the use of pressure quadrupole in place of velocity quadrupole for aerodynamic noise. William C. Meecham. **35**: 408—1963
On transonic pressure fluctuations. Peter A. Franken. **35**: 1456—1963

ABSTRACTS
Acoustical-attenuation qualities of plug nozzles. Abe Peter and Roy Kamo. **35**: 790—1963
Annoyance judgments of sonic booms. Karl S. Pearsons. **35**: 1913—1963
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10. Ultrasonics (Supersonics)

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10.3 Ultrasonic Instruments. (See also 5.18.)

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Analysis and design of a 3-Gc/sec quartz-cavity resonator as a hypersonic source for liquids. James L. Stewart and Ellen S. Stewart. **35**: 913—1963
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Apparatus for ultrasonic cleaning. Charles G. Leonhardt. **35**: 1105—1963
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Method and apparatus for measuring lengths by means of sound waves. Karl Benno Weidner and Heinz Jaenicke. **35**: 444—1963
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10.4 Gases, Ultrasonic Velocities, Dispersion, and Absorption. (See also 11.3.)

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Design of narrow-beamwidth transducers. G. Kossoff. **35**: 905—1963
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10.5 Liquids, Ultrasonic Velocities, Dispersion, and Absorption. (See also 13.2 and 13.3.)

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Ultrasonic technique for the melting transition and melt of polymers. R. K. Eby. 35: 1883—1963

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10.6 Solids, Ultrasonic Velocities, Dispersion, and Absorption

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Diffraction of ultrasound in elastically anisotropic NaCl and in some other materials. Emmanuel P. Papadakis. 35: 490—1963
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10.7 Physical Effects of Ultrasonic Waves. (See also 10.2.)

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Statistical approach to ultrasonic cavitation. D. Messinò, D. Sette, and F. Wanderlingh. 35: 1575—1963
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10.8 Chemical Effects of Ultrasonic Waves

LETTERS TO THE EDITOR
Sonoluminescence and the chemical effects of cavitation. Robert Hickling. 35: 1833—1963

10.9 Biological Effects of Ultrasonic Waves

PAPERS
Degradation of DNA by intense, noncavitating ultrasound. S. A. Hawley, R. M. Macleod, and F. Dunn. 35: 1285—1963

ABSTRACTS
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Ultrasonic device for physiological mapping. Benson Carlin. 35: 798—1963

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11. Waves and Vibrations. (See also 13.)

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Acoustic energy losses in rocket-engine cavities. R. H. Cantrell, R. W. Hart, and F. T. McClure. 35: 773—1963
Acoustic resonance in combustion systems. F. T. McClure. 35: 772—1963
Acoustic wavefunctions and multipole sources. Eugen Skudrzyk. 35: 1893—1963
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11.1.5 Analogies

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Acoustic properties of steel wool. David Alan Bies. **35**: 495—1963
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Analogies. J. Zwislocki. **35**: 1035—1963

11.2 Diffraction. Interference. Scattering. Reflection. Echoes, Standing Waves

PAPERS
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Sound propagation in homogeneous deciduous and evergreen woods. T. F. W. Embleton. **35**: 1119—1963
Symmetric planar vibrations of a rotating disk. Pravin G. Bhuta and John P. Jones. **35**: 982—1963
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Vibrations of longitudinally polarized ferroelectric cylindrical tubes. Gordon E. Martin. **35**: 510—1963

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Analysis of rough surfaces by scattering. Leonard N. Liebermann. **35**: 932—1963
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11.2.1 Gross Movement of Matter by Sound or Vibration. Acoustic Streaming. Chladni Figures. Kundt's Striae. Sensitive Flames. (See also 5.14 and 10.7.)

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11.3 Propagation of Sound. Absorption during Propagation. Velocity of Sound. Second Sound. Refraction. Wavelength. Doppler Effect. (See also 10.4, 10.5, 10.6, 13.2, and 13.3.)

PAPERS

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Sound radiation from vibrating surfaces. George Chertock. **35**: 796—1963

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Velocity of sound in rods. James N. Lange, Jr. **35**: 381—1963

11.4 Radiation from Vibrating Objects. Acoustic Impedance. (See also 5.3, 12.3Z, and 13.7.)

PAPERS

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Design of vibrating disks for mechanical radiation. Philip H. Williams. **35**: 114—1963

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Sound radiation from vibrating surfaces. George Chertock. **35**: 796—1963

Surface waves in a fluid–solid interface near a discontinuity. T. Yip and F. H. Middleton. **35**: 1894—1963

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Utilization of combustion-driven oscillations. Abbott A. Putnam. **35**: 773—1963

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11.5 Sounds of Finite Amplitude. Distortion. (See also 12.3 and 13.10.)

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11.6.1 Sources of Sound. (See also 7.8 and 11.4.)

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13.2 Propagation of Sound in Water. Attenuation. Fluctuation

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13.4 Reflection. Echoes. Structures for Absorbing Sound in Water

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13.6 Scattering. Reverberation in Water

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